TECHNOLOGY DEPT.

First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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Public Acclaims Plymouth 6 At First Showing; Chrysler Plans $42,000,000 Outlay

Money to Be Spent During Next Six Months; Car Orders Mount Swiftly With Production Rate Increased

New York, Nov. 17.—The new Plymouth models, recently announced in Automotive Daily News, were presented to the general public throughout the country today in the more than 7,000 dealer establishments handling this line. Early reports received from correspondents in many cities indicate a most flattering and enthusiastic welcome for the 1933 Plymouths.

In this city the Broadway showroom had a crowd of visitors awaiting the opening of its doors. Gratifying crowds visited the place during the morning and in the early afternoon there was actually a jam.

The Philadelphia and Washington dealers reported similar conditions. Figures are being compiled on the number of visitors attending the initial showing and these will be available in a day or so.

Coincidental with the showing of the new models, Walter Chrysler made a statement calling attention to the fact that production of these Plymouths had caused his company to make commitments for $42,000,000 worth of materials to be delivered over a period of six to eight months, the purchases reaching into seventeen basic industries. These commitments had been made before the new Plymouths were even announced over the radio.

Even before the dealers had seen the new models, 20,000 orders had been placed for Plymouth deliveries by retail merchants. Production on the new cars began at 1,000 units a day and this has been boosted to 1,200. If orders continue to be received at the rate they are now coming in, this production schedule will be maintained for the balance of November and through December as well. Total production of the Plymouth during November will probably run to 25,000 units.

In forthcoming issues Automotive Daily News will publish reports on public attendance at the opening day showing in dealerships throughout the country.

MOTOR FREIGHT TEST CASE OPENS IN PENNSYLVANIA

Philadelphia, Nov. 17.—Six motor freight companies and two trolley lines have joined in a test case before the Public Service Commission to establish the right of such carriers to conduct joint long-distance hauling operations. The application, which probably will eventually lead to a Supreme Court decision, according to attorneys, has been protested by the Pennsylvania and Western Maryland Railroad companies.

The case hangs on whether motor and street railway companies can combine to ship goods from one end of the state to another by connecting local freight lines operated under joint tariff schedules. The eight carriers joining in the application and which serve practically the entire southern half of the state are: The Alko Express Lines, Pittsburgh to Johnstown via Ligonier and Greensburg, and a circular route from Johnstown via Chambersburg, York, Lancaster, Harrisburg, Lewistown, Altoona and Johnstown; York

(Contnued on Page 2)

NEW PIERCE-ARROW MODELS ARE SEEN BY DISTRIBUTORS

Buffalo, N. Y., Nov. 17.—"The reception accorded 1933 Pierce-Arrow models shown privately to a convention of 300 distributors indicates that 1933 business will exceed our expectations," says Roy H. Faulkner, vice-president in charge of sales.

The first public showings of these new cars will not be made until automobile show time, but officials revealed enough of the company's plans to indicate that the new Pierce-Arrows will incorporate many im-

(Contnued on Page 2)

CHEVROLET PAY ROLL INCREASED IN ALL PLANT DIVISIONS

Detroit, Nov. 17.—Chevrolet Motor Company has increased substantially its working forces during the past few weeks. The pay roll at the main plant in Flint is now approximately 8,000; more than 2,500 men are employed at the Saginaw foundry, and 736 in the Bay City plant where carburetors and other small parts are manufactured.

Activity at the Chevrolet plants thus far has been confined to the manufacture of motors and parts. Assembly operationes are to follow shortly. By November 9, the company had shipped 15,000 of the new motors to branches throughout the country for assembly.

More than 50,000 cars will be required for dealers display purposes when the new line is introduced early in December.

FORD OFFICIALS DENY CLOSING OF CORK PLANT

London, Nov. 17.—Sir Percival Perry, chairman of the Ford Motor Company of Britain, has issued a denial of reports to the effect that the company had decided to close its factory at Cork, Ireland.

On the contrary, the company, Sir Percival said, "has been considering and reviewing every possible opportunity of extending its activities in Cork as far as possible on an economy basis."

CANADIAN CHRYSLER STARTS PLYMOUTH SIX

Detroit, Nov. 17.—Chrysler Corporation of Canada has started production on the new Plymouth six.

Employment currently totals 650 men and will be increased gradually as production starts on other new models.

Key City Sales in First Half Of November Were Generally Off

Used Car Sales Make Relatively Better Showing Than New Units, According to A. D. N. Survey

New York, Nov. 17.—Early returns in the usual mid-month check-up of key city sales shows the expected decline in distribution of cars and trucks.

The Cleveland Automobile Manufacturers and Dealers Association reports that new car sales in that city up to November 15 totaled 226, which compares with 415 in the first half of October this year and with 1,014 for the entire month of November last year, the half month figures not being available for that period. Sales of used cars in Cleveland showed to better advantage, a condition noted in many cities throughout the country this year. In the first half of the present month 2,335 used vehicles were sold, as against 3,023 in the first half of October and 5,062 in the entire month of November last year. The total for this month in used car sales should not be very much below that of November, 1931.

Louisville, Ky., reports 92 new car sales in the first half of November, comparing with 110 sales in the first half of October.

San Antonio, Tex., showed just about the seasonal loss that might have been expected. Up to November 15 new car sales totaled 74, as against 115 in the first half of October and 84 in the first half of last November. Truck sales have held fairly even, the total this month having been 17, as against 16 in the first half of October and 19 in the first fifteen days of November, 1931. Used car sales to date this month have been 240 vehicle units, com-

(Continued on Page 4)

SOUTH-CENTRAL A.W.A. TO HOLD CONVENTION AT NEW ORLEANS, LA.

Chicago, Nov. 17.—With B. W. Ruark, general manager of the Motor and Equipment Wholesalers Association, representing the national organization, the Southcentral Automotive Wholesalers Association will convene at New Orleans, La., Monday, it was announced here today.

In the course of his trip through the central Southern area Mr. Ruark will attend a number of other meetings of jobber groups, including sessions at Nashville, Tenn., and Birmingham, Ala.

The meeting of the Southcentral Automotive Wholesalers Association at New Orleans will be an occasion for discussion of important matters affecting wholesalers, such as the M. E. W. A. 14-point program for the protection and promotion of jobber distribution, and the bureau for interchange of jobbtr experiences on lines of merchandise handled, the latter being known as the "gold star point."

Officers of the Southcentral regional group, one of the recently organized units of the F. E. W. A., are: President, K. P. Allen, Motor Supply Company, Meridian, Miss.; vice-president, C. J. Verret, Ozburn-Abston & Co., Memphis, Tenn., and secretary-treasurer, E. B. Conn, Central Electric Company, Hattiesburgh, Miss.

SPRINGFIELD A. D. A. OPPOSES DIVERTING GASOLINE TAX FUND

Springfield, Mass., Nov. 17.—The Springfield Automotive Dealers' Association has launched a fight against the state's movement to divert gasoline tax funds to relief work instead of for road building.

Members of the dealers' association at its meeting in Hotel Kimball yesterday noon were greatly disturbed by the attempt to divert the gasoline tax. Harry W. Stacy, secretary, said they are "very much up at arms."

They contend it would be most unfair to saddle upon the operators of motor vehicles any governmental cost not resulting from their use.

The association plans to take some definite action toward preventing

(Contnued on Page 4)

DEALER STOCKS OF HUDSON AND ESSEX DECREASE SHARPLY

Detroit, Nov. 17.—With Hudson and Essex retail sales exceeding shipments in a ratio of almost 2 to 1, dealer stocks on hand decreased sharply during October, says C. G. Abbott, general sales manager of the Hudson Motor Car Company.

The position of the Hudson Company has improved steadily since the introduction of the Terraplane last July. There has been an actual increase of sales of 1,313 cars for the three months ended November 1, 1932, as compared with 1931.

CONTROL OF MOTOR CARRIERS BY FEDERAL BODY IS DEMANDED

Hot Springs, Ark., Nov. 17.—Suggestions that "overproduction" in motor carrier service is bringing the industry "to the verge of bankruptcy," and that the present railroad situation "may mean government ownership," were made today at the convention of the National Association of Railroad and Utilities Commissioners.

The report of the committee on Motor Vehicle Transportation declared that the failure of the last Congress to enact legislation for regulation of interstate motor carriers "is almost a tragedy."

"It appears that nothing short of a cataclysm will awaken Congress from its lethargy," said the report. "And we feel that an awakening of catastrophic proportions may overwhelm us unless action is had."

Unless the development of motor transportation can be carried forward in a constructive way and under such restrictions as will insure the perpetuity and financial integrity of the rail lines, "the people are going to choose the lesser of two evils and tax the motor carriers off the highways," it was declared by the committee.

The report was presented by the committee chairman, Amos A. Betts, chairman of the Arizona Corporation Commission.

The suggested possibility of government ownership of the railroads was made by Ernest I. Lewis, member of the Interstate Commerce Commission, when he opened a discussion of the subject of valuation.

CHAPIN SUGGESTS TAX REDUCTIONS FOR MOTOR VEHICLES

Washington, Nov. 17. — Secretary of Commerce Chapin suggested the desirability of reducing motor vehicle taxes in a talk before a meeting of the Association of State Highway Commissioners.

The highway user, "in times like the present, particularly," the secretary said, "has a right to demand a thorough review of his tax rates. Taxes imposed on the values of 1928 and 1929 fall heavily upon people with the incomes of 1931 and 1932. In thousands of cases the records show declining motor vehicle registration and declining use due to heavy cost.

"When tax rates become oppressive they stifle initiative and employment. This is a matter of large moment when the main objective of all of us is to get men back into productive work. Even if we could ignore that large issue, we cannot escape the fact that unduly high rates automatically reduce the tax returns. So it follows that taxes, like other costs, must be brought into balance with depleted incomes."

TEXAS RAILWAYS ASK I. C. C. RELIEF FROM FREIGHT INCREASES

Washington, Nov. 17.—Eight railroads operating within the state of Texas have petitioned the Interstate Commerce Commission to relieve them from applying emergency freight rate increases on less-than-carload intrastate traffic, on the ground that such rates will divert traffic to so-called "transport companies" operated by competing railroads and independent motor carriers.

The transport companies are combination rail-and-motor pick-up and delivery services, which take less-than-carload freight by motor truck to the rail line, ship by rail to destination point, and thence again by truck to store door of consignee. Such companies are not covered by the commission's order relative to the advanced rates, nor by the order of the Texas commission making such rates effective November 15.

The rates in question are those prescribed by the commission in the so-called Fifteen Per Cent Case, Ex Parte 103. Texas, as well as other states, at first refused to make the increases on traffic moving intrastate within its borders.

Upon request of the commission, however, five states, including Texas, voluntarily advanced the rates when the commission advised them that their failure to do so constituted discrimination against interstate commerce. Other states were ordered by the commission to make the required advances.

MOTOR FREIGHT TEST CASE OPENS IN PENNSYLVANIA

(Continued from Page 1)

Motor Express, York to Philadelphia, and other routes centered in York; Horn's Motor Express, Chambersburg to Harrisburg; H. A. Hartman & Son, Harrisburg to Lebanon, Reading and Pottsville; Scott Coyle, Johnstown and Somerset; Rural Motor Express, Altoona and Roaring Springs; West Penn Railways Company, Pittsburgh, Greensburg, Uniontown and Brownsville; Pittsburgh Railways Company, Pittsburgh, Washington and Charleroi.

The motor carriers stressed the need for such service at the hearing in Harrisburg on November 15, while the street railway companies added to an appeal for such revenue to help out vanishing passenger receipts. The railroads, on the other hand, emphasized the present dwindling of their revenues by truck and bus competition and contended that approval of the application would establish a precedent which would lead to still greater inroads on their long distance hauling receipts. Whatever the public commission may order, attorneys said, would be taken to the Appellate Court.

SUPREME COURT HEARS ARGUMENTS IN TEXAS OIL CONTROL CASE

Washington, Nov. 17.—Arguments in a case involving the right of the Governor of Texas to control production of oil in the east Texas oil field by martial law were concluded before the Supreme Court of the United States November 16.

The appeal in this case, Nos. 11 and 453, Sterling et al. vs. Constantin et al., was taken to the Supreme Court from a decision of the District Court of the United States for the Eastern District of Texas which permanently enjoined the governor and other state officials from curtailing oil production by means of military orders. The governor had issued a proclamation declaring that a state of insurrection existed in the east Texas field, and from time to time production was reduced through military orders.

Counsel for the respondent oil operators affected by the action of the state officials, in presenting their arguments to the high tribunal, contended that the action of the governor in declaring martial law and curtailing production, was arbitrary and capricious, and was not designed to prevent insurrection, but was a "clear attempt to bolster the price of oil."

NEW PIERCE-ARROW MODELS ARE SEEN BY DISTRIBUTORS

(Continued from Page 1)

portant mechanical improvements and also modernized Pierce-Arrow design, and that cars will be priced to meet the present economic conditions.

A. R. Erskine, president and chairman, expressed belief that the automobile business might see a 50 per cent. increase in 1933. The convention was addressed by A. J. Chanter, first vice-president and general manager; Roy H. Faulkner, D. J. Willoughby, general sales manager; Karl M. Wise, director of engineering; W. M. Baldwin, director of advertising; M. J. Casey of Roche, Williams & Cunnyngham.

EATON MFG. CO. REPORTS SUBSTANTIAL UPTURN

Cleveland, Nov. 17.—Operations in a few of the plants of Eaton Manufacturing Company have increased perceptibly during the past few weeks due to stimulated demand from the automobile industry.

Company's cap plant, although a small unit, is operating on a night and day shift. November in the bumper division will be the best month since April, 1931.

FINANCIAL NEWS

SHERWIN-WILLIAMS

New York, Nov. 17.—Sherwin-Williams reports for the year to August 31 net profit of $702,786 after interest, depreciation, Federal taxes, etc., equal to $4.51 a share on 155,521 shares of 6 per cent. preferred stock. This compares with $3,222,733, equal after dividends paid on the preferred stock to $3.62 a share on 635,583 shares of common stock in the preceding fiscal year.

WESTINGHOUSE

Pittsburgh, Nov. 17.—Westinghouse Electric and Manufacturing Company yesterday announced reductions on all domestic refrigerator models manufactured by the company. New prices on the Westinghouse four and one-quarter cubic foot refrigerators are as low as $129 delivered and installed with tax paid. This price applies in the Eastern territory. Prices are slightly higher in the Western and Southern territories, the announcement says. Proportionate reductions in prices have been made on all other models.

LOUISIANA OIL REFINING

New Orleans, Nov. 17.—Louisiana Oil Refining reports for three months to September 30 gross sales of $3,356,164. After deduction of sales cost, administrative expense, tank car operation, depletion of cost and depreciation expense with Federal tax net, deficit was $356,336.

NO. CENTRAL TEXAS OIL

New York, Nov. 17.—North Central Texas Oil reports for the quarter to September 30 net profit of $13,999 after depletion, Federal taxes, etc. This compares with net profit of $13,288 in the preceding quarter and net loss of $8,098 in the September quarter of 1931. For nine months net profit was $35,201 after above charges, comparing with net loss of $2,482 in the first nine months of 1631.

LEAD STOCKS

New York, Nov. 17.—Stocks of lead in the United States at the end of October totaled 170,171 short tons, compared with 171,831 tons at the end of September and 139,796 tons at the end of October, 1931, the American Bureau of Metal Statistics reports. October production amounted to 28,076 tons, compared with 22,813 tons in the previous month and 41,268 tons in October, 1931. Shipments totaled 29,764 tons in October, against 26,412 tons in September and 34,276 tons in October, 1931.

STANOLIND

New York, Nov. 17. — Stanolind Crude Oil Purchasing Company, subsidiary of Standard Oil Company of Indiana and formerly known as Sinclair Crude Oil Purchasing Company, has called for redemption on January 16, 1933, at 101½ and interest all of its series A 5½ per cent. bonds outstanding. The company had $32,081,000 of these bonds in the hands of the public at the end of 1931. This year, to date, approximately $10,000,000 of the bonds have been retired.

ALABAMA MILEAGE TAX EFFECTIVE DECEMBER 27

Montgomery, Ala., Nov. 17 (UTPS).—The Tidwell bill, which places a mileage tax on contract carriers, will go into effect December 27, as a result of a decision of the attorney general's office at the request of Hugh White, president of the Public Service Commission. It was ruled that the bill, known as House Bill No. 113, is a penal statute, and under terms of the state laws becomes effective sixty days after being signed by the governor.

The Public Service Commission asked for the ruling, as the bill did not set aside a date for it to go into effect. Gov. Miller signed the bill on October 28.

MASTER TIRE BUYS QUAKER CITY RUBBER

Akron, O., Nov. 17.—The Master Tire and Rubber Corporation announced today the acquisition of the plant and assets of the Quaker City Rubber Company of Philadelphia.

The Master combination already includes the Falls Tire and Rubber Company at Cuyahoga Falls and the Giant and Cooper Companies at Findlay, O.

SPARKS *from* DETROIT

Safety Services

Turkey and Beans

A Sermon for Sellers

Scraping the Cupboard

Chris Sinsabaugh—Detroit Editor

BESIDES being director of the National Safety Clinic Fred Parks also is vice-president of Bendix-Cowdrey Brake Tester, Inc., so the two jobs have much in common. The Clinic has been founded with the laudable ambition to reduce automobile fatilities, and the brake tester is one of the ways this can be brought about.

Well launched, the Clinic is very much in the automobile picture and its Mr. Parks' job to see that the general public gets acquainted with its aims and ambitions. And the short-cut to this, the Bendix executive thinks, is via newspaper channels, which is why the Paul Prys sat around in his suite at the Detroit-Leland and got the story in ABC's which even this commentator could understand.

* * *

PARKS STAGGERED THESE HARD-BOILED NEWSPAPER MEN in leading up to his subject by reciting that 34,000 men, women and children were killed in motor accidents last year and, in addition, more than one and a quarter million were injured. The costs of these accidents in one year exceed two and a half billions and that amount of money would run our entire government for six months. Think, the total number of people injured each year exceeds the population of fifteen different states!

* * *

GETTING SERIOUS because of these astounding statistics, we Paul Prys followed Mr. Parks' talk and learned that the Clinic's keynote is based on educational work which will tend to induce motorists to drive into service stations and have their cars thoroughly tested as to brakes, chassis alignment, tires, steering, wheel alignment, horn, windshield and everything that has to do with the car being a safe automobile. The brake tester can do all that.

After learning all the ailments the motorist is supposed to take the car to one of service stations which has been appointed by the Clinic after investigating that station's responsibility and ability to do a first class job. By removing the trouble at its source in this manner, it is expected that accidents will be materially reduced in number.

It might be explained, too, that the Clinic is a voluntary association without capital stock. It has no entrance fees, assessments, dues or income. Its members must be actively engaged in servicing automobiles; they must subscribe to and adopt the standards of procedure of motor vehicle testing recommended by the Clinic.

* * *

A FEATURE of the B-O-P banquet Monday night was the paying of a bet in which the Central and Eastern sectors figured. On a quota percentage Central sold more cars than its rival so at the banquet Eastern salesmen were segregated from their rivals by a chicken wire barricade. The losers were fed on beans and subjected to jibes from the winners, while the latter, sitting high, wide and handsome, wore silk hats and ate turkey. The national average for the sales contest was 135.3 per cent. of the quota. Central sold 141.4 to East's 116.4.

* * *

THE B-O-PERS CAME to town with some smart wisecracks that are worth passing along to the column's customers. For instance, one of them was: "Out West it's so tough the people are howling so loud the wolves can't sleep," to which our local contingent retorted: "It's so tough around this part of the country the Detroit River is running only three days a week."

* * *

MEBBE YOU DIDN'T READ the Pierce-Arrow ad in Saturday's A. D. N. We around the Fisher building did and we think Roy Faulkner wrote a sermon for salesmen when he said: "It took fortitude to stand the disappointments you have had and still move on. But, in all sincerity, I believe you are laying the groundwork of a great future—no matter what car you sell."

And then: "We must go on. It would be too bad to drown ten feet from shore when the hardest part of the swimming is over."

* * *

WITH STOCKS DELETED the way they are, the big play in Detroit right now is the sale of executives' cars and demonstrators. These are being played up in window displays and many's the fine bargain is being picked up by the observing ones.

NOVEMBER TRUCK ISSUE

Owners of 1,600,000 Business Vehicles Will Get the Issue of November 30

Fleet owners having 10 or more vehicles, 27,000 names, will receive the truck issue November 30. Entire Machol list being used, with copies personally addressed. Only Automotive Daily News can provide such wide extra distribution at no additional cost to the advertiser.

If you want to reach not only those owners but all exclusive truck dealers, important bus operators, 8,000 passenger car dealers and important factory officials, use that issue with a page at $350; half page at $175 or a quarter page at $87.50.

Forms close 2 days preceding publication.

Automotive Daily News

H. A. TARANTOUS, *Bus. Mgr.*, 350 HUDSON STREET, N. Y. C.
DETROIT OFFICE: Geo. M. Slocum, Manager
Fisher Building, Detroit, Mich.
WESTERN OFFICE: Willard R. Cotton, Manager
333 No. Michigan Ave., Chicago, Ill.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, success, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen; the men on the firing line, the men who bring home the bacon or don't.

BUCKING THE RED INK LINE

In its current issue Field Facts, the magazine of the Automotive Electric Association, suggests a volume contest for companies in its field. The idea is to pit the whole sales organization against red ink. To bring in volume rather than individual scores. The publication says this idea will be valuable in the electric field, but why shouldn't it be helpful in any field, the service field, for instance.

In a recent issue Automative Daily News told of the experience of a dealer who transferred his whole sales staff to selling service, with satisfying results. Why not form the whole sales force into a football team to buck the old red ink line? Why not a volume contest for companies in any line of selling?

Here is what Field Facts has to say about the volume contest idea:

Let's have a volume contest!—a Demonstration Selling contest, with far-reaching results, but not directed to the end of selling more right at the moment.

A good way to vary the contest diet is to follow the purely educational contest with a hard-hitting competition aimed at immediate results.

Such a contest is this net profit contest. This contest inspires the rivalry of the entire staff with the "red" side of the ledger.

The feature of this contest is that the reward comes only when the organization has made a specific net profit on the month's business. As every employee has to achieve his personal quota in order to bring this about a very unique situation is created. Namely, each employee is as much interested in his co-worker's activity as in his own! A man in the battery unit wants the carburetor unit to make a sale! And vice versa throughout the entire organization. Team-work — inter-department selling—is the product of this net profit contest.

Individual quotas are established by this method: A distribution of the general overhead of the organization is made equally among the personnel and the salary overhead is added to each individual quota. These figures are based on daily overheads, so that each employee knows the amount of gross he must sell per day in order to break even with the house. The object is for each man to exceed his quota in order that the organization may work toward the specified net profit for the month.

If every man exceeds his quota during the month, and the house makes the specified net profit, the entire staff is given entertainment in the form of a dinner and a dance. Usually, these are affairs to which the men bring their wives.

For variations, three individual prizes may be awarded to the holders of the highest selling records. But even these individual prizes should be made dependent upon whether or not the organization as a whole makes good, so that the vital element of team-work and inter-department suggestion is never lost.

Money or entertainment is not the only goal in this contest. The management has noted that this contest engenders this important attitude—nobody wants to be a "wet blanket" and block the reward of the rest of the employees.

A day-to-day record of results maintains interest during the contest period. Each employee is represented on a wall chart. The individual daily quota is recorded on the chart. The daily sales volume is also marked on the chart. If a man exceeds his quota for the day, it is marked in black, if not, it is chalked up in red.

A contest inspiring rivalry with the red side of the ledger is a good way to promote volume plus a net profit for the house!

A fundamental reason why this contest can be translated to your business without trepidation is that it detours the one reason why so maney contests fail. Instead of pitting one individual against his fellow, this contest pits the entire organization against the loss side of the ledger.

A contest pitting man against man lacks the big essential of promoting teamwork. Inter-department selling may suffer if the individuals are seeking an individual prize.

But the individual contest, of course, does deserve a place in this analysis of contests. Because the individual contest is the most difficult from a steering wheel point of view does not mean that it cannot be used. We will find that it can.

A further merit of the net profit contest is that it is fair to everybody. With his quota based on his share of the overhead, plus his own salary, the new man has as much chance to distinguish himself as the veteran floorman.

UNIQUE AD COPY USED BY DEALER

F. A. E. Thorling, Inc., Nash dealer of Hackensack, N. J., uses a four-inch one column advertisement in the local newspapers, stressing one used car in an unique manner as follows:

To the Public:

Nov. 15, 1932.

Nash is my name. I am a 4-Door Town-Sedan with Built-in-Trunk on the "Special 8" 121-in. W. B. Chassis, built in 1931. My Shoes are practically new and my paint, a deep Maroon, is as shiny as the day I came out of the factory. Mechanically I am perfect, for I was driven less than 10,000 miles. I only had one owner and he took good care of me.

I am now looking for a new home and will carry my new master thousands of miles for only oil, gas and water. I may be seen at ——

Then follows the name of the dealer.

Free Alcohol With Radiator Service

An unusual service offer has been made by the A. B. Burkholder, Inc., Chevrolet dealers, in Grand Rapids, Mich. The company offers free alcohol to Chevrolet owners during the entire winter.

Radiators and motors are cleaned and refilled with water and sufficient alcohol for safety at zero weather. For this service a charge of $2.50 is made. After that the company supplies Chevrolet owners with all the alcohol they need for the winter, regardless of how long or severe the winter is. The offer holds good providing drivers keep their water circulating system free from leaks.

The company will not, however, replace alcohol free of charge after wrecks or collisions, it has been stated. The inducement of free alcohol has brought a number of owners to the dealer, where an opportunity is given to show the owner new car models.

Prosperity Breakfast Follows Sale of 41 New Nash Cars in Boston

"No time for sleeping" is the slogan put into actual practice by Boston Nash retail, when the bunch in that organization set their alarm clocks for a 7 o'clock prosperity breakfast at one of the in-town hotels in celebration of a record-breaking October business, during which time forty-one new Nash cars and $30,000 worth of used cars were retailed. Every man but one, left for floor duty, reported from both new and used car departments.

H. C. Hart, president of Nash New England Company, the Boston distributorship, disclosed sales figures which indicated the sales job of the Boston organization did, which put October substantially ahead of October a year ago, beat September of this year by 77 per cent., beat August 66 2/3 per cent., beat July, and almost equaled June.

Boston reports that some of the men slept at the hotel all night, and that some didn't go to bed at all for fear they would not be on time, the penalty being for anyone late, a speech for the presidential candidate not of the late comer's party, and to whom he is arbitrarily opposed. Matty Mack, the only tardy member—to whose tardiness President Hart referred as characteristic of the party for which Mack is a strong exponent—obligingly did his stuff and paid his penalty in a splendid tribute to the opposing candidate. Two of the boys arrived half dressed, and one was dragged through the door pajama-clad.

It was learned that during one week of the October accomplishment by the Boston organization, while competition was bewailing poor business conditions and recording poor sales for the week, the Boston crowd went ahead and tucked away a nice total of twelve. The whole meeting teemed with confidence.

The entire meeting was steeped with old-fashioned enthusiasm and with appropriate remarks from F. M. Rollins, sales director.

DEALER DOINGS

ST. PAUL, MINN.

The Malmon Motor Company won first place in the Minneapolis and St. Paul zone of a nationwide sales contest sponsored by the Buick-Olds-Pontiac Sales Company, which included both new and used car sales. According to J. J. Malmon, official of the company, every salesman of the St. Paul's firm's force qualified for at least one prize in this contest. The Twin Cities zone of the Buick-Olds-Pontiac Sales Company comprises Minnesota, part of Wisconsin and Iowa, and all of North and South Dakota.

* * *

Addition of E. J. Roberts and John H. Lesher to its new car sales force has been announced by Harold J. Slawick, Inc., Dodge-Plymouth dealer. Mr. Roberts was formerly connected with the Holt Motor Company, Chrysler-Plymouth distributor.

* * *

GREAT FALLS, MONT.

G. J. Gates, Great Falls zone representative of the Buick-Olds-Pontiac Sales Company, accompanied by O. M. Roessel, sales promotion manager; W. M. Austin, business manager; W. J. Wooster, sales promotion manager of Chevrolet, and W. R. Knudsen, parts and service manager, are in Detroit attending the nation-wide meeting of the organization. The Montana zone was organized last January as the N. W. Sales Company, and on June 1 became the Buick-Olds-Pontiac Sales Company.

* * *

KEOKUK, IOWA

T. R. Bartholomew has disposed of his interests in the Bartholomew Brothers Ford Agency, Keokuk, to a brother, H. L. Bartholomew, and will enter the insurance business.

* * *

MELCHER, IOWA

The Melcher Motor Company, Melcher, has been purchased by a former owner, Jack McCullough, of Charles Hancock and will continue its operation.

* * *

SEATTLE, WASH.

Now is the time to buy. This is the sentiment that has been adopted by the Seattle Automobile Dealers' Association, with the election past. The association has taken the lead in putting pep into the business situation, and declares that now is the time to go, with no more waiting, such as was the case during the uncertainty of the pre-election period.

* * *

The big co-operative advertising plan of the Seattle A. D. A. was launched November 15, its aim being to attract car owners to member service shops. The board of trustees have all tentatively decided to go ahead with an automobile show at the Civic Auditorium, February 26 to March 4. Committees are getting into preliminary action.

* * *

NEWARK, N. J.

Claude E. Holgate, secretary of the Newark Automobile Trade Association and a member of the Advertising Club of Newark, has been appointed chairman of a committee appointed by the latter organization to investigate an ordinance against fly-by-night merchants to be presented to the Newark City Commission soon.

* * *

ATLANTA, GA.

Announcement is made to day of a change in retail operations here for Cadillac, La Salle and Oldsmobile, whose cars have been handled the past three years by Robert H. Martin under the company name of Martin Cadillac-Oldsmobile. The new dealership has been organized under the name of Capital Automobile Company, and will maintain sales and service operations from 839 W. Peachtree Street. Elwyn W. Thompson, president of the company, has been in the automobile business here for the past thirteen years.

* * *

YOUNGSTOWN, O.

L. B. Brockett, president of the Packard-Youngstown Co., Wick Avenue, reports he has accepted the distributorship for Hupmobile cars in five counties, Mahoning, Trumbull, Columbiana, Mercer and Lawrence. The firm also announces Ray Merwin, has been made service manager of the new Hupmobile service department.

* * *

DECATUR, ILL.

Tenney & Company, Decatur, Ill., has been appointed authorized dealer for the Pontiac automobile in that city and vicinity. The firm will continue its Buick dealership which it has held since 1921. "Woody" Clark and Virgil Fear, formerly with the Pontiac company of Robert R. Peck, have joined Tenney & Company.

Used Car Selling Prices

Automotive Daily News in this department offers for the benefit of its dealer and salesmen readers a compilation of prices at which used cars have within the past few days been offered for sale by reputable dealers in various cities. These prices will vary on condition and from other causes. They are not presented as being the exact prices at which these models should be sold, but simply as the prices at which they have been offered for sale by dealers in the various cities. Other cities will appear in subsequent issues of this paper.

Portland, Ore.

Make.	1932	1931	1930	1929
Auburn 8	....	585- 895	[4]495	....
Buick Light	[2]625	685- 695	[1]385	[2]345
Buick Big	....	....	[2]545	445
Chevrolet	[2]575- 595	[2]325- 450	[1]275-[1]350	[1]95- 295
Chrysler 6	....	675	495	[1]325
Chrysler 8	1175- 1395	....	....	....
Chrysler Imp.	1250	....	....	....
Cord	1795	....	....	....
Dodge 6	....	....	[2]475	255
Essex	....	425	....	225
Ford 4	[2]465- [2]495	[1]215- 395	[2]265- [2]295	[2]165- 225
Ford 8	495- [2]505	....	....	[2]215
Franklin	....	....	....	850
Graham 6	....	[2]535-[2]675	....	395
Hudson	....	....	[2]495	295- 395
Hupmobile 6	....	....	....	385- 395
Lincoln	....	....	1750	....
Nash 6	....	....	495	255- 345
Nash T 18	....	....	[2]550	....
Nash Adv.	....	795	625	....
Oakland 6	....	....	....	315
Oakland 8	....	....	395	....
Oldsmobile 6	....	625	425	235- 365
Packard	....	....	....	895
Plymouth	[2]450- 695	....	295- 375	285
Pontiac 6	....	....	325	....
Reo	....	....	....	375
Studebaker 6	....	495	595	....
Studebaker Dic.	....	685-[2]695	565	445
Studebaker Com.	....	....	[2]545	435- 485
Studebaker Pres.	....	....	....	435
Willys-Knight	....	....	595	....
Willys-Over. 6	....	....	....	195

Legend: [1]coach; [2]coupe; [3]roadster; [4]convertible; [5]victoria; [6]limousine; [7]brougham; [8]touring or phaeton. When no symbol is used the car is a sedan.

KINGS COUNTY BUICK ADDS PONTIAC LINES

Brooklyn, N. Y., Nov. 17.—One of the most important announcements in automobile circles in the borough is that of the appointment of Kings County Buick, Inc., as authorized distributors for Pontiac 6's and V-8's. In connection with this appointment, T. Southworth, president of Kings County Buick, states that his company will be the atuhorized service organization for Pontiacs for Brooklyn.

Kings County Buick made its public bow ten years ago in a half store at 1603 Bushwick Ave. Through its efforts, more than 20,000 Buicks have been purchased and over 200,000 separate service jobs were completed at its seven service stations located in the Bedford, Bushwick, Bay Ridge, Prospect, Williamsburg and Coney Island districts.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday, Monday and Holidays, and Tuesday When a Holiday Falls on Monday

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Co-operation Is Vital

THERE never was a time when co-operation between manufacturers and retail merchants and among retail merchants themselves was more essential, not only to success but actually to business life.

Obviously factories are responsible for the type of retail merchants who are given franchises to sell their products. Factory men appoint dealers and these representatives of the manufacturer have been trained to know whether men are qualified to make a success of selling motor vehicles to the public. That a man has not before sold motor vehicles is not necessarily a sign that he will not succeed in the field. On the other hand, any retailer starting without training in this field needs help. This the factories can give him.

So we may say that the manufacturers' responsibility in the present situation lies in proper selection of dealers and in giving them the training needed to insure success or at least a chance to survive. Experience is a good teacher, perhaps the best, but it is too slow an educator in the present state of affairs. The new dealer starting without practical knowledge of the motor vehicle field might learn through his mistakes, but it is likely today that he would be bankrupt before he had learned.

On the other hand, the dealers have a responsibility of their own, quite aside from any help the factories can give them. H. Bertram Lewis, vice-president of the Commercial Credit Company, recently summed this up brilliantly in an address to dealers:

"As salesmen, most dealers are proficient. Some are competent sales managers. A few are able service managers. And once in a blue moon you meet one who is a really first class used car merchant. But few indeed there are who qualify as general managers—who co-ordinate all departments of the business into one efficient whole, producing its full potential both of volume and of profit. And none but those who master that function are going to cash in fully on the buying years that seem to be ahead.

"One and all, too, must learn to co-operate. The price-cutting orgy must cease. The dealer wails long and loud about unprofitable trading, and if he were today under factory pressure to sell impossible quotas he would be entitled to a sympathetic hearing—but, by and large, he isn't. He has pretty much made his own quotas for several years past and still he trades unsoundly. Granted that the weaklings set the pace in this respect and that with better factory selection and training the weaklings could, in time, be weeded out, still, as a group, the retailers themselves are chiefly to blame for buying their business, and at a savage cost.

"The outlook for the industry, in fact, depends on just two things—less selfishness and more co-operation. When factories and dealers both put mutual service ahead of individual advantage both will begin to prosper. There's a sales harvest coming some day whatever they do, but it will be a disaster instead of a blessing unless those who ought to profit by it have learned that in a world so closely knit as ours no man and no corporation can hog it all, and that year in and year out we shall all be better off for working in a live-and-let-live spirit and thinking in terms of the industry's welfare rather than solely of our own.

"This, in fact, is our forecast concerning industry in general in these United States. Conditions will change. Employment will pick up. A buying wave will supersede the present wave of thrift. Sales volumes will mount in all lines.

"But unless we have learned how to turn sales into profits a renewal of buying will only mean more work without more gain. If our sales of that era are bought at each other's expense, as sales in so many lines are at this fatuous stage, we will only succeed in speeding up the treadmill without escaping from its limitations.

"With greater poise and broader vision, the automotive outlook may be very bright indeed. But if the old expediency prevails when times speed up—there's nothing to it."

In This Corner....

Opinions, suggestions, complaints, criticisms, grievances or what have you. Open to every one to say anything, anyhow, any time. The communications printed in this department represent the ideas and opinions of our readers. They are not necessarily ours. If you have something to say on any phase of automotive activity, wholesale, retail or abusive, let us hear from you and we will tell the world.

Sharing the Profits

Automotive Daily News: Just to remind the factory officials that only a few years ago, when prosperity was written on every page, the automobile factories were making so much money off the sale of automobiles to their dealers that they gave it away to their stockholders in fabulous sums, gave their employees special propositions on purchasing their stock and equaled their employees' savings up to a certain limit.

That was a noble and thoughtful thing to do and I am sure a lot of these factory employees are able to use their savings now to keep alive, but the factory and all its employee's bread is buttered by the dealer. Why not give the dealer a slice and put him on the same basis as all the rest of the factory employees? When the next bull market comes around, give us dealers a chance.

Our company has been connected with one factory for over fifteen years, but do we get a raise in salary (discount)? No! Are we shown any other privilege that they do not offer a new dealer? No!

I believe the factories have some new ideas that are very good, but I am sure the dealers have a lot of good ideas that should be welcomed by the factory. I believe that some automobile manufacturer will make a big hit some day with dealers, that are strong financially, by acknowledging their leadership with a factory profit-sharing idea.

What are the dealers' opinions on these matters?

E. B. S., Zanesville, O.

SPRINGFIELD A. D. A. OPPOSES DIVERTING GASOLINE TAX FUND

(Continued from Page 1)

general use of the tax fund, but has not decided yet what it will be. Mr. Stacy explained that information from other parts of the state is being sought and that the association's future moves will be based largely upon it.

The meeting was well attended by dealers, who see in the proposed diversion of the taxes the working of an injustice. To make the automobile owner pay for welfare air or any of the other expenses of government not directly attributable to the automobile is, in their opinion, unjust.

It is believed likely that the Springfield association will unite with other similar groups in the state in a joint protest against general employment of the gasoline tax. Automobile clubs also are strongly aligned against it.

KEY CITY SALES SHOW DECLINE IN EARLY NOVEMBER

(Continued from Page 1)

pared with 253 in the first half of October and 343 in the first half of November last year.

Our correspondent in San Antonio reports that there is little hope for improvement in sales for the rest of the month, because of the imminence of new car announcements. The total for the entire month of November is expected to be slightly better. General business conditions are quiet.

Returns from Los Angeles for November sales are fragmentary. Up to November 5 passenger car sales in southern California totaled 178 units. This compares will 200 passenger cars sold between October 1 and 6 and with 136 units sold in the first five days of November, 1931. Here we have a slight increase over the record of a year ago, something rare in sales figures for the current year. Up to November 5 there had been sold in Los Angeles 21 commercial venicles. This compares with 33 sales up to October 6 and 37 in the first five days of November, 1931.

COMING EVENTS

NOVEMBER

11-19—**Glasgow, Scotland.** Motor Show
19—**Charlotte, N. C.** North Carolina Truck Owners' Association, meeting.
18-Dec. 4.—**Paris, France.** Aeronautical Show.

DECEMBER

1- 2—**Washington, D. C.** Highway Research Board, meeting.
2- 3—**Detroit.** National Standard Parts Association Convention.
5—**New Orleans, La.** Association of Asphalt Paving Technicologists.
5- 9—**New York.** Annual Meeting A. S. M. E.
5-10—**New York.** Power and Mechanical Engineering Exposition.
5-16—**Detroit.** Motor and Equipment Manufacturers Association, convention, Hotel Statler.
5-10—**Detroit.** Third Annual Joint Trade Show, National Standard Parts Association and Motor and Equipment Manufacturers' Association, Convention Hall
6- 8—**New Orleans, La.** National Association of Finance Companies, annual convention.
12-13—**Springfield, Ill.** Automotive Trade Association annual convention, St. Nicholas Hotel.

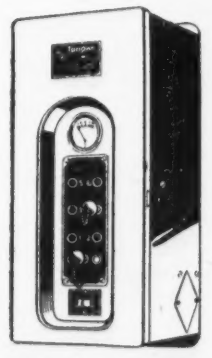
JANUARY

7-14—**New York City.** National Automobile Show, Grand Central Palace.
7-14—**San Francisco, Cal.** Motor Car Dealers' Association of San Francisco, show.
7-15—**Los Angeles, Cal.** Los Angeles Motor Car Dealers' Association, twentieth annual show.
8-14—**St. Louis.** Automobile Dealers' Association Show, Midwest Terminal Building.
9—**New York, N. Y.** Society of Automotive Engineers' Show, meeting.
12—**New York.** Annual S. A. E. dinner, Hotel Pennsylvania
12-13—**Springfield, Ill.** Illinois Automotive Trade Association, meeting.
14-21—**Newark, N. J.** Newark Automobile Dealers' Association, show.
14-21—**Buffalo, N. Y.** Annual show.
15-21—**Cincinnati, O.** Cincinnati Automobile Dealers' Association, show.
16-21—**Brooklyn, N. Y.** Annual Show.
16-21—**Philadelphia.** Annual show.
16-23—**Detroit.** Highway and Building Congress
21-28—**Boston, Mass.** Boston Automobile Dealers' Association. Boston Commercial Motor Vehicle Association, show.
21-28—**Detroit, Mich.** Detroit Automobile Dealers' Association, show.
22-26—**Detroit.** Annual S. A. E. meeting, Book-Cadillac Hotel.
27-Feb. 15—**Cairo, Egypt.** International Salon.
28-Feb. 4—**Chicago.** National Automobile Show, Coliseum
28-Feb. 5—**Washington, D. C.** Washington Automotive Trades Association, show.

FEBRUARY

4-11—**Indianapolis.** Twenty-second annual show, Indiana State Fair Ground.
9-11—**Springfield, Ill.** Springfield Automobile Dealers' Association, show.
11-18—**Kansas City, Mo.** Kansas City Motor Car Dealers' Show.
27-Mar. 14—**New York City.** Chemical Exposition, Grand Central Palace.
20-21—**Cleveland, O.** National Petroleum Association

THERE MUST BE A REASON



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For 16 years Tungar has lead the field of battery chargers in popularity. Today there are more Tungar Battery Chargers in use than all other battery chargers combined. There is a reason! G-E engineers have constantly added new features to the Tungar line. For economy, dependabilty and ease of operation Tungar Chargers rate the best.

You'll need a charger of Tungar caliber for the big battery charging season this fall and winter. We suggest that you write immediately for complete details about the Tungar line.

GENERAL ELECTRIC

AUTOMOTIVE PRODUCTS

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Production--Engineering--Factory

Current and Future Developments In Chromium Plating Abroad

SECOND INSTALLMENT

It has been stated that working at higher temperatures leads to the formation of more complex ions and hence renders the deposition of the chromium more difficult, but these statements evidently apply to the older practice of using sulphate or chloride solutions.

Chromic acid is comparatively expensive, but the articles plated show that little remains to be desired, and there is little doubt that, with the advancement of the practice, chemical firms will be able to reduce the price. Although only a small proportion of chromium sulphate is used, its presence greatly increases the yield of metal deposited. Much of the chromic acid appears to remain, and may in a sense partly act as a catalytic agent, which furthers the already active sulphate.

The ratio of chromic acid to chromium sulphate has much to do with the accuracy of the deposition. The remaining important factors are the temperature and the cathode current density. Curiously enough, in certain special instances, the lower the current density, the thicker is the deposit of chromium. From this it may be gathered that chemical reactions are largely responsible for the thickness of the deposit, since in nearly all systems of electrodeposition the richer the current the more metal will be deposited. The calculated yield of metal from trivalent chromium is 0.65 gm. per amp. hour, while that from the hexavalent salt is 0.33 gm.

Objects to be plated should be thoroughly cleaned with water prior to introducing to the operating tank. The immersion and arrangement of the articles in the bath require little or no experience. The preparation of the electrolyte simply consists of dissolving the requisite amount of chromic acid in water, and adding the weighed proportion of chromium sulphite. Where a storage tank with steam coils is available this is a simple matter, but it has often to be first made up in enameled pails in smaller plating shops. The electrolyte should be heated first, after which the articles to be plated should be introduced, and the current switched on.

It has often been contended that the currents employed were much too high. One electro-plater was known to work at 90 amps. per square foot, while the pressure was maintained below three volts. It is, however, practically impossible to state fixed directions for the plating of various articles of different shape and size, in different baths, working on different systems. A successful chromium plating solution has been made up of a 25 per cent. solution of chromic acid, to which was added 0.3 per cent. of cromium sulphate. This electrolyte is used at 20 degrees Centigrade. Other electrolytes are usually worked at a slightly higher temperature, but care must be taken to remove the spray by fans or other means.

The throwing power of chromium is said to be poor, but this is only when comparison is made with the ordinary metals deposited, and there are others which are much poorer in this respect than chromium. For the plating of odd-shaped parts, such as are used in the automobile industry, the current density should practically always be maintained high as compared with that used for other metals. It is important to see that the deposit is free from any inclosed basic matter, and this can be found only by dissolving the outer skin of chromium with acid and examining the initial layers. This point appears to be directly affected by the time taken to complete the electrolysis. The reason given is that the hydrogen ion concentration around the cathode is controlled by the amount of current which passes through. In this way any lacking in the requisite amount of hydrogen opens up the scope for basic salts to separate out and precipitate on the deposited metal.

The cost of chromium plating is expected to be considerably reduced in the near future, in view of experiments at present under consideration. These chiefly apply to the application of superposed alternating current, which does no actual depositing of metal, but possesses the extraordinary faculty of practically eliminating passivation. In this manner there is no limit to the direct current which may be employed, so long as the alternating current is also present in the desired proportion. Accordingly, the rich direct current can deposit the articles with chromium in a fraction of the time at present in use, which means a saving of considerable magnitude in the time required.

Most of this new work has been performed in South Africa and Germany, but if it is adopted at the same rate as was chromium plating itself, it should not be long in being introduced. So far, it has been worked in England experimentally, but the results secured have, it is stated, been almost phenomenal.

TROPIC-AIRE CHARGES PATENT INFRINGEMENT

Minnetapolis, Minn., Nov. 17.—Tropic-Aire, Inc., through Edmund Burke, general manager, announces that it has filed suit against four Toledo, O., automobile heater manufacturers, alleging infringement of Tropic-Aire patents on fan-equipped hot water heaters for automobiles.

Defendants in the Toledo, O., case, include Associated Parts, Inc., manufacturers of the Red Head Heater; and the Lucas Manufacturing Company; Goerlich's, Inc., and John E. Goerlich. The three last named, it is alleged, are manufacturers of hot water heaters under various brand names including the Goerlich Hot Wave and All Weather. It is charged that four Tropic-Aire patents are being infringed by these manufacturers.

HANDY HAS SECTIONED FILTER DEMONSTRATOR

Distributors of Handy oil filters, manufactured by the Handy Governor Corporation are being supplied with sections or cut-out filters. These are designed to show the general public just how a filter operates in removing impurities from the oil.

The Handy filter is purely a mechanical device. The oil passes through a thick section of closely woven felt, which catches the dirt, metal fragments and other debris which the oil stream accumulates. The matter of the oil color is not essential. The vital merit of good filtration is the removal of abrasive foreign matter.

This cut-out filter is designed to give car owners an idea of the importance of filter replacement by showing them the mass of dirt, metal and sludge that accumulates in a filter after 10,000 miles of running.

EMSCO-JADSON EXHIBITS AT JOINT TRADE SHOW

Jobbers and their salesmen who anticipate a visit to the Joint Trade Show, December 5-10, are cordially invited to visit the officials and see the products of the Emsco-Jadson organization at their booths.

A full line of products will be on display, together with samples of advertising literature.

In connection with the exhibit at the show, the Emsco-Jadson companies will open a new warehouse at 1290 South Canal St., Chicago, which will be in charge of C. A. Gilbert, who will combine Chicago with his New York territory.

G. E. ANNOUNCES NEW LINE OF FULL VOLTAGE MAGNETIC SWITCHES

The General Electric Company has announced a new line of full voltage magnetic switches built to the standards of the Underwriters' Laboratories for industrial control equipment for use in Class I, Group D hazardous locations where inflammable or volatile liquids, gases, or mixtures are stored, manufactured, used, or handled. These switches are weatherproof as well as being suitable for use in corrosive atmospheres.

The new devices consist of standard General Electric magnetic switches with special operating coils and special contact tips for operation under oil, and an oil-immersed temperature overload relay. The cylindrical cast iron oil tank and top cover have wide metal to metal flanges machines to close limits to insure a tight fit. The enclosure is, in itself, explosion proof, having been designed to meet Underwriters' requirements for air-break switches, and the oil is used only to protect the magnetic switch and the overload relay against corrosive fumes.

The switch and the oil-immersed overload relay are fastened to the top cover and extend down into the oil. The relay can be reset by means of a button, which extends through the top cover. Three threaded conduit entrances are provided in the top cover for connection to the line, motor and remotely mounted pushbutton station.

For use in connection with these switches, a pushbutton station, also meeting underwriters' specifications, has been developed for remote control in Class I, group D hazardous locations.

This new line of devices supplements the similar line of explosion proof switches, which have air-break contacts.

MARMON-HERRINGTON ADDS NEW OUTLETS

Indianapolis, Ind., Nov. 17.—The appointment of two new distributors in important Western territories is announced by Bert Dingley, vice-president in charge of sales of the Marmon-Herrington Company, Inc., Indianapolis, manufacturers of all-wheel-drive trucks.

The first of these distributors is the Associated Equipment Company, Ltd., San Francisco, Cal., which will handle the sale of Marmon-Herrington trucks in the wide territory comprising northern California and the entire state of Nevada. Well known in truck and equipment circles, this company is headed by J. H. Heil, president; William C. Gunther, secretary, and W. H. Worden, director of sales. The headquarters of the company are at 355 Freemont St., San Francisco. The R. L. Harrison Company, Inc., has been appointed Marmon-Herrington distributor for the state of New Mexico. R. L. Harrison is president of this company which is president of this company, which is situated in Albuquerque, N. M.

VAN CLEEF TO HOLD SALES CONFERENCE

Chicago, Nov. 17.—From December 10 to 15 the sales executives and field men of Van Cleef Brothers will hold their yearly conference at headquarters. During this time they will discuss sales policies and products, as affected by current conditions. They are the manufacturer of Dutch Brand rubber and chemical products. Also during this conference, prizes will be presented to winners of the Dimeology Sales Campaign, which preceded the conference.

PERFEX AT JOINT SHOW

The Perfex Corporation of Milwaukee, Wis., announces that it will show a new line of radiator cores at the Joint Trade Show in Detroit, December 5-10.

SHERIDAN REPRESENTS CRANE

Richard M. Sheridan & Co. have been appointed representative for the Crane Packing Company in the greater Chicago territory.

H. L. HORNING DEFINES AND ANALYZES RESEARCH WORK

SECOND INSTALLMENT

John A. C. Warner, General Manager Society of Automotive Engineers — Through constructive research work two great industries have come to understand their mutual problems better. I refer to the co-operative fuel research which has been carried on for ten years or more by the society, the Bureau of Standards, the American Petroleum Institute and the National Automobile Chamber of Commerce. Perhaps one reason why more has not been said about it is that research men are naturally extremely modest in speaking of their own accomplishments. This is one reason why industry, as a whole, does not utilize the results of research to the fullest possible advantage.

In the fuels research, a large group of men representing various organizations in the automotive and petroleum industries have worked very earnestly toward a common objective, that of matching the fuel with the engine. In this they have been extremely successful and have achieved results of inestimable value to the industries and to the public alike. They have succeeded in coordinating engines and fuels in such manner as to give greater satisfaction to the public in the utilization of their cars and have indirectly made possible great economies on a nation-wide and universal basis. One interesting phase of the fuel research work has been accomplished during the last few weeks, when a group of high-powered research men took their cars and fuels to Uniontown Hill and made many important determinations of knocking characteristics, which were later correlated with observations made in Mr. Horning's laboratory at Waukesha. Several weeks were spent in the solution of this detonation problem and the correlation of road test observations with those made in the laboratory. It seems to me that this work has been an excellent demonstration of the ability of a society like our own to sponsor a co-operative enterprise into which able men have seen fit to pour their energies toward a common solution of great benefit to all concerned.

Mr. Horning himself deserves much credit for advances that have been made along these lines. He has unselfishly devoted a great deal of his personal time, thought and funds to the work, and has demonstrated his great ability as an organizer and executive research man who should be rated "exponentially." We have the word of many keen observers to indicate that the phenomenal advancement of the automotive industry could not have taken place had this co-operative attitude not prevailed.

TRUCK FLEET OPERATORS USE SCHOOLS TO TRAIN DRIVERS

Truck fleet operators find that in some cases schools conducted by some agency other than the company are best for the training of driver-salesmen. The advantage is said to be that, in this way, the services of experienced training specialists are made available to the men.

One company reports that its route salesmen are taking the course in salesmanship offered by the night school of the local Young Men's Christian Association. Another company advises that it encourages its men to attend night school, without giving the name of the school. Part-time classes for route salesmen in the milk and laundry industries have been conducted for a number of years in Texas under the auspices of the State Board for Vocational Education. These classes are financed out of Federal and state funds and offer a minimum instruction of 144 hours per year.

Writing of these part-time schools the Federal Board for Vocational Education said:

It is quite probable that the state and city directors in almost every state in the Union will be glad to co-operate with the officials of large firms in helping them to develop and give training courses for their driver-salesmen. In most states, these classes can be given during the working hours of the men, in what are known as the part-time schools. Officials of large corporations, who want to find out what can be done to help them to develop a training program for their men, should write to the State Director of Vocational Education in the state in which the classes will be established. In practically every state these officials will be glad to confer with the corporation's officials to tell of the facilities which are available, and to locate men who are competent to organize foremen training classes and teacher training classes. The teacher training classes can usually be relied upon to produce the instructors needed by any company in developing its program.

In the larger cities it is quite probable that evening classes can be established in the public schools, or that there may be existing classes to which the men may be admitted.

Contests as they usually are conducted are not methods of training men. However, some companies are supplementing their training work with contests designed to encourage their routemen to educate and improve themselves. Thus, if the route salesmen of a given company are good drivers, polite, courteous and of neat appearance, but lacking in knowledge of the product, the management may arrange a contest offering a premium for knowledge of product. Again, if the men are good salesmen, but are prone to be careless in driving, the contest will provide awards for safe driving rather than for salesmanship. Through a point system of scoring, the contests serve to build up the men where they are weakest.

Some of these contests run continuously, with awards at regular intervals. Others are conducted for a limited period. Some of the point systems give ratings for all qualifications; others emphasize only a few.

From time to time the company conducting this contest prepares and publishes in its house organ a list of the qualifications it thinks a good routeman should have. Then, at the end of each year, each branch elects its "best" salesmen on the basis of these specifications. The awards are made annually.

The winners are awarded watches, and the four highest are given money prizes in addition. Because the winners also are in line for promotion to the position of inspector or branch manager, the company reports that competition is very keen. To keep up interest throughout the years, the company draws attention to the competition at regular intervals by suggesting to the men how they can improve their chances of winning. In one issue of its house organ, for instance, the speci-

(Continued on Page 11)

This advertisement is paid

Attention Stockholders

We have today been granted an injunction in the Delaware courts restraining the Aviation Corporation and the directors of the company from issuing approximately 1,997,776 shares of the unissued stock of your company for certain assets of the North American Aviation Corporation, Inc., believed by us to be worth less than half of the value of the stock proposed to be issued for payment of same.

This deal was concocted by the present managers of the company in great secrecy and haste and without consultation with its principal stockholders and most of its directors. We believe it was originally planned to railroad this deal through a special directors' meeting called for today with ruthless disregard of all stockholders' rights, but as a result of our opposition and court action, this was stopped. We have thus temporarily protected your interests, but in order to safeguard same permanently, a majority of stockholders' votes must be cast in opposition to the present management at a special stockholders' meeting, which we have today demanded be held.

Cord Corporation is the largest stockholder of your company, owning approximately 30% of its outstanding stock. Our interests are identical with your own, and we enlist your support, confident that with this record of present management before you, you will not permit your votes to be cast to perpetuate their power and control.

The control of your company has been in the hands of a small group of New York bankers, whose combined holdings, according to the records of recent date aggregate less than 7% of the total outstanding stock.

Shortly after organization of your company, these same men furnished the New York Stock Exchange with a consolidated balance sheet showing assets of approximately $54,000,000. Today, the latest available consolidated balance sheet shows assets of approximately $16,000,000. Therefore, it appears that in the short period of three years, there has been lost through extravagance, waste, speculation, shrinkage of properties, cancellation of officers' debts, and various other types of mismanagement, the staggering sum of $38,000,000 of your money.

In contrast with the above, during almost identically the same period, the group of companies which we have managed has progressed, has furnished employment to tens of thousands, has manufactured and sold nearly $120,000,000 of our products, and has had net earnings of over ten and one-half million dollars, out of which we have paid dividends of several millions to thousands of stockholders. The financial position of our companies today is stronger than in 1929.

We have the greatest confidence in the future of the air transportation business, and strongly feel that it will be one of the major factors in leading us out of the present economic situation. No better assurance of our faith in this business could be offered than our recent investment of over $5,000,000, through which we became the largest stockholder in your company.

You will no doubt receive from the present management statements taking credit for great savings and economies reflected in operations since April.

We wish to go on record with you at this point that practically every one of these savings that have resulted in operating economies has been placed into effect, not only at our suggestion, but at our insistence. Furthermore, if all of our suggestions and definite recommendations had not met so much opposition and had been carried out, we predict the savings already accomplished would have been nearly doubled.

For example, we recommended the complete closing of the New York offices, which was a ridiculous, inefficient piece of extravagance, costing the company $50,000 a month; the closing of the manufacturing plants that were operating at a loss of $1,500,000 per year; that much duplication of overhead be eliminated by the consolidation of the various operating divisions of the company that would have resulted in the saving of over $5,000 per month; the adoption of certain modern flying equipment that would operate at from 10c. to 20c. per mile more economically than the equipment then being used, which would have shown a substantial saving of over $30,000 per month; we recommended that certain operating

s paid for personally by E. L. Cord

rs Aviation Corporation

schedules be changed with certain increases and decreases in service, which would more efficiently serve the public and the Post Office Department, and at the same time could be more efficiently and economically operated; we proposed a bonus system by which employees in all branches of the service would be entitled to compete, and under which plan the company would have received a potential saving of at least an additional $50,000 per month, through the added efficiency of its personnel and through the further cementing of loyalty of employees to one another and to the company.

Of course, the detail of carrying out these suggestions was in the hands of the management, but the original suggestions for all of these savings were from ourselves.

It was thoroughly understood by the management at the time of our entry into this company last April that we were utterly opposed to the policy of continual trading and speculation with the company's funds in stock market securities, having nothing to do with aviation, or any other speculative securities for that matter. We believed at the time and believe now that, regardless of the technical position of the market, the potential profit or loss, or the recouping of losses from bad investments already made, or any other reason, that your company should take no further risks in stock speculations with your money, and that the company's funds should be kept entirely in cash and securities no less liquid than U. S. Treasury Certificates, to be held as a backlog for future development purposes.

Our original investment in this company was made at the invitation of W. A. Harriman, former chairman of its Board of Directors, who promised us three members on a Board of 35 directors. At the annual meeting held on June 2, 1932, when our three representatives, Mr. E. L. Cord, Mr. L. B. Manning, and Mr. Lyndol L. Young were elected to the Board, Mr. Harriman publicly announced that he had invited us into this company believing our experience in the manufacturing and transportation business qualified us to furnish to your company something which the existing management lacked, and which would be of unquestionable value to the company. We quickly ascertained, however, that our recommendations were being sidetracked, that too many careers were at stake in an organization infested with politics, and that the most important decisions regarding the company's business were being made in secret meetings of the reigning clique, instead of openly arrived at in meetings of the Executive Committee and the Board, and in general the present management was more interested in perpetuating its own power, and trading in the stock market, and retaining control of the company, than it was in making the air transportation business, which is the primary business of the company, successful.

After innumerable conferences and delays, followed by subterfuge, broken promises, and connivance on the part of the few dominating members of the Board, while we were seriously trying to effect some compromise to bring about the cooperation necessary to place constructive and efficient policies in operation for the benefit of the stockholders, we reluctantly reached the decision that the only way this cooperation could be obtained was through a substantial change in the present Board of Directors.

Learning of our intention to demand a special stockholders' meeting for the purpose of electing directors whose true purpose and sole motive would be to obtain efficient and capable management, the present management has concocted in great secrecy and haste this desperate scheme to issue nearly 2,000,000 additional shares of your company's stock for a wholly inadequate consideration, and in accordance with a secret understanding which would enable them to vote this stock for a period of ten years and thereby forever deprive a majority of the present stockholders of all opportunity to control the corporation in their own interests, and to prevent a full investigation and disclosure of a record of their mismanagement during the past three years, that as previously stated has already lost your company $38,000,000.

Temporarily, this scheme has been halted by our injunction suit, but in order to permanently safeguard your interest, it is necessary that we have your proxy in order that the control of the directorate may be changed, and the management of your company placed in capable and efficient hands, with a record of progress and constructive achievement behind it.

Whether you realize it or not, after your company was originally formed, the by-laws were so changed as to allow for the setting up of a classified Board, serving for one, two, and three years. As it now stands, only one-third of the company's directors are elected annually. We feel that this is a vicious set-up to perpetuate the control of the company and allow a few to continue to control, without appreciable stock ownership. It is strongly believed that stockholders in all companies should have the right to elect all of its directors annually, and your proxy to this special meeting, which has been called, will be used, among other things, to amend the by-laws of the company in such a way as to bring about annual election of its directors.

We solicit your proxies in order to assure the following:

1. Economical and efficient conduct of the company's affairs and business.

2. The reduction of operating expenses and the increase of revenues wherever possible to the end that this business may be placed upon a profitable basis and its stock made a profitable investment to you who own it.

3. The purchase of all supplies and equipment upon a truly competitive basis, with no purchases from companies in which we, or any interlooking directorate, are interested, unless by proven tests they can furnish a better product for the job at the lowest price.

4. A constantly improved service to the public.

5. Elimination of the present bureaucracy and a square deal for all employees, with an opportunity for advancement based upon merit alone.

Do not be misled by other requests for proxies which you will no doubt receive. Regardless of whether or not you have signed any previous proxy, if you believe in the above policies it will be to your advantage to sign the proxy which we have mailed to the stockholders of record. If you own stock not registered in your name you will not receive my letter. For your own protection please write me the number of shares you own and in whose name it is registered.

Yours very truly,

E. L. CORD,

Nov. 10, 1932. President, Cord Corporation, Chicago, Ill.

ON THE OTHER HAND

PAY ROLLS INCREASE 10%

Lansing, Mich., Nov. 17.—An increase of 10 per cent. in the industrial pay rolls in Michigan in October over September was reported today by the State Department of Labor and Industry. In the same period the average weekly income of workers in 391 industrial plants mounted from $14.52 to $17.81. The number of men employed continued to decline.

STEPS UP PRODUCTION

Chicopee, Mass., Nov. 17.—Fisk Rubber Company will start production of bicycle tires at its plant here on December 1 next. Fisk officials announced they would move the machinery and equipment from the Cudahy, Wis., plant of the Federal Rubber Company, a Fisk subsidiary, to this city. According to present plans, the company hopes to build up a daily production schedule of 2,000 tires before January 1, 1933.

There is sufficient equipment on hand at the Cudahy plant to meet requirements for the heavy Christmas trade. It is understood that the Fisk plant here will experience a general two weeks' shutdown in mid-January.

GAIN IN EMPLOYMENT

Providence, R. I., Nov. 17.—Pay rolls in Rhode Island increased 12.5 per cent during October over September figures, according to announcement by the Brown University Bureau of Business Reserach today. The amount disbursed during the month to employees of manufacturing and non-manufacturing concerns was $11,223,636, it was reported.

MILL ON NIGHT SHIFT

West Warren, Mass., Nov. 17.—Increased orders at the Maryland Silk Mills, Inc., plant have necessitated the operation of a night shift which will start tonight. The firm has about 100 employees.

RECALLS 200 WORKERS

Follansbee, W. Va., Nov. 17.—Follansbee Brothers Company today recalled 200 men to work. They will start Monday. The steel plant has been closed since June 30.

TIMKEN DIVIDEND

Canton, O., Nov. 17.—The Timken Roller Bearing Company has declared a dividend of 25 cents a share, payable December 5 to stockholders of record November 18.

N. J. FARMERS HEAR TALKS ON TRUCK LEGISLATION

Newport, N. J., Nov. 17. — Truck license legislation proposed for consideration by the 1933 New Jersey Legislature was discussed at a meeting of the Cumberland County Board of Agriculture in the township hall here.

A. G. Waller, economist of the New Jersey agricultural experiment station, led the discussion. At the request of the New Jersey Federation of County Boards of Agriculture, he compiled information on the revenue provided by trucks for maintenance of highways, the cost of truck licenses in this and other states, the rate of increased by bills introduced last year and the effect of these measures on New Jersey farmers.

A report of the legislative measures recommended by the state farm bureau and grange was made by H. M. Loveland, chairman of the legislative committee of the country board of agriculture. The effect of the extension program in improving the agricultural situation during the past year was described by the county agent.

The board invited all farmers of Newport and neighboring sections to attend the meeting and many took advantage of the invitation.

BODIES AND PARTS PRODUCTION OFF IN 1931

Washington, Nov. 17.—Motor vehicle bodies and parts valued at $865,652,968 were made last year in the United States, a decline of 37.9 per cent. from the $1,393,907,554 reported in 1929, according to information from the census of manufactures made available as of November 17 by the Department of Commerce.

The following additional information was provided: The more important items entering into the total for 1931 are: 1,289,346 closed passenger bodies (other than public conveyance), valued at $2,502,715; 32,207 open passenger bodies, $5,784,198; 167,247 truck and commercial bodies, $26,919,649; 11,403 public conveyance bodies, $8,189,086; 1,720,416 front axles, $15,723,268; 1,611,569 rear-axle assemblies, complete, $52,123,471; 12,938,322 wheels (not including dual wheels or six-wheel sets), $24,334,491; 8,553,583 shock absorbers, $11,122,080; radiators, valued at $27,330,613; transmission and differential gears, $45,575,870.

OIL TRADE FAVORS STATE OUTPUT CONTROL

Houston, Tex., Nov. 17.—The proposed state compact for the control and regulation of oil production in the United States, sponsored by the Federal Oil Conservation Board, was commended and the action of the Oil Board complimented in resolutions adopted by the board of directors of the American Petroleum Institute in session at Houston, Ray Lyman Wilbur, secretary of the interior, has announced.

"It is apparent," the resolution states, "that some constructive method having the support both of Federal and state governments, is essential if the industry is to preserve a proper equilibrium."

Secretary Wilbur, in commenting on the resolutions of the Institute board, said: "This and the action of the Texas Legislature put into effect the conservation law which had been abrogated. The oil industry senses the absolute necessity of the control of production and drilling and a state compact, so it can play fair between state, the Federal government and the consumer."

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Cumulative New Commercial Car Registration Statistics, October, 1932

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Sprinfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Metropolitan district figures compiled by Sherlock & Arnold are included in New York state total. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers.

Returns for today: Connecticut, Georgia, Idaho, Kansas, Maryland, Montana, New Hampshire, North Carolina, Ohio, Oregon, Pennsylvania, South Dakota, Virginia and District of Columbia.

In this table, 26 states and the District of Columbia.

Commercial car figures do not include buses.

States	Autocar	Brockway	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	Indiana	International	La France-Republic	Mack	Pierce-Arrow	Reo	Sterling	Stewart	Studebaker	White	Willys-Overland	Miscellaneous	Totals	States
Arkansas			125		4		116	3		22							1	1		1	273	Arkansas
Connecticut	5	1	92	4	15	6	99	8	3	26		4	1	9		2	4				279	Connecticut
Delaware			11				7	2	1	3										1	25	Delaware
Florida			87	9	6	7	89	1	3	27				2				1	1	24	257	Florida
Georgia			68		4	4	101	2	4	8		2		1				1		8	203	Georgia
Idaho			14				15			7				1							37	Idaho
Illinois	1		159	20	18	2	190	9	3	53		3		9			3	2	1	8	481	Illinois
Indiana			108	5	12		112	14	13	31		1		7			9		2	3	317	Indiana
Kansas			132	10	7		119	11		35		1		2			5		1	3	326	Kansas
Maryland	4	7	83	7	15	1	83	11	2	25		2		5			1	1		3	250	Maryland
Michigan			142	3	26	3	206	15		49				8			11	3	1	2	469	Michigan
Minnesota		1	136	3	20	3	110	5		26	1	7		12		1	6		2	2	335	Minnesota
Montana			23		1		54		29					4			3	1	3	1	119	Montana
N. Hampshire			34	1	3		44	3		5		1		2		2			2		97	New Hamp.
No. Carolina			262		16		180	17		18				3				3		12	511	No. Carolina
North Dakota			17		2		23	3		9							1				55	No. Dakota
Ohio	2		149	14	30		318	35	15	52		3		8			19		7	10	662	Ohio
Oregon			32		2	1	48	5		10				1			2	1		1	103	Oregon
Penn'vania	16	10	401	14	97	4	458	46	12	108	1	11		10	1	9	18	10	10	16	1252	Penn'vania
So. Carolina			52		6		68		1	1							1	1		1	131	So. Carolina
S. Dakota			13	2	3		18			9							2				47	S. Dakota
Utah			26		3		15	1		3		2									50	Utah
Vermont			11	2	2		29	1		5				1							51	Vermont
Virginia	3		129	5	6	1	136	16	1	14		2		8				2		6	329	Virginia
West Virginia	2		48	2	12		74	2	5	7				6	*		2		1	2	163	W. Virginia
Wisconsin			92	3	10	1	87	5		17				2	2	1	3		2	3	228	Wisconsin
Dist. of Col.	6	3	23	2	7		45	7		8						1				2	104	Dist. of Col.
Totals	39	22	2469	106	327	33	2844	222	92	578	2	39	1	101	3	16	91	27	33	109	7154	Totals
Arkansas, '31			123		9		108	2		35		3									280	Arkansas, '31
Conn., 1931	4	1	180	1	33	11	202	16		31	5	7	2	27		4	4	6	4	11	549	Conn., 1931
Delaware, 31	1		24				26	2		4		1		1		1				1	61	Delaware, 31
Florida, '31		1	218		7	1	221			12		2		7				1			470	Florida, '31
Georgia, 1931	1	4	147		4		142	3		7	1	2		2			2	2	1		318	Georgia, 1931
Idaho, 1931			19		9		42	1		11				1			3	3	2	1	92	Idaho, 1931
Illinois, 1931	1		382	36	28	4	324	24		70		2		14	6		13	1	9	12	926	Illinois, '31
Indiana, '31		3	211	1	13	1	205	17		55				14		1	7		10	12	550	Indiana, '31
Kansas, 1931		2	147	7	16	1	133	10		28	1	5		3			3	4	2	8	370	Kansas, 1931
Maryland, '31	8	7	133	5	17	1	123	13		28		28		14			3	15	6	3	404	Maryland, '31
Montana, '31		*	40		5	1	89	4		35		1		2			1		2		182	Montana, '31
Michigan, 31	2		218	3	22	4	329	29		29	3	1	2	18			6		6	12	684	Michigan, '31
Minn., 1931			190	9	13	4	192	10		49		2		18	2	2	16	6	15	3	531	Minn., 1931
N. Hamp., '31	1	1	54	2	1		70	1		6	1	4		1			1		2	2	147	N. Hamp., '31
No. Ca'lina, '31	2		235	12	21		287	8		26	2	1		5			1	4	4	84	692	N. Ca'lina, '31
N. Dakota,'31			18		4		19			23				1			2		4	1	72	N. Dakota, '31
Ohio, '31	2	5	367	11	37	7	438	72		90	4	3	1	32		6	24	10	21	40	1220	Ohio, '31
Oregon '31			45		7	4	84	8		9	1		1	2	1			4	2	1	169	Oregon, '31
Penn'vania '31	34	16	603	17	141	10	750	62		150	6	34		75	8	33	19	9	28	47	2042	Pen'vania, 31
S. Dakota, '31			27	1	3		24			5				2			2		2		66	S. Dakota, '31
S. Carolina, '31			99		6	3	79	3		4		9		4			1			14	222	S. Ca'lina, '31
Utah, 1931			45		2		46			10				5			4		1		113	Utah, 1931
Vermont, '31			35		6		36	2		10							1	1	3	1	94	Vermont, '31
Virginia, 1931	5	3	252	3	13	1	186	14		13		1		11			4	8	3	1	518	Virginia, '31
W. Virginia,'31		1	128		19		115	8		21				8			5	1	8	7	321	W. Va., '31
Wisconsin, '31			191	7	17	3	172	14		30	1		1	13	3	1	10	1	11	5	480	Wis., 1931
D. of Col., '31	2	2	74	6	6	1	90	6		11		1		1			2	4	1	10	217	D. of Col., '31
Totals, 1931	63	46	4207	121	459	57	4582	329	*	802	25	107	7	281	20	48	134	79	147	276	11790	Totals, 31

*Combined with Brockway.

Major Specifications and Mechanical Details of 1932 Commercial Cars

LEADING MAKES NATIONALLY DISTRIBUTED

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H.P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Transmission Make	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brake Lining	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Standard Tire Sizes Rear
Austin	400	225	Own	L	4	2.2x3	45.6	7.8	13@3200	G	Hex	Rock	Spic	Own	Til	Gra	Aut	W-G	3	Sal	Sp	5.25	O4M	76.5	75	1210	18x3.75	18x3.75
Autocar R	1½	2250	Own	L	6	3⅜x4¾	314.0	33.7	75@2400	G	G & O	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Own	Sp	33.5	LO4IHM	380	159	5370	20x7.00	20x7.00D
Autocar RE	2	2300	Own	L	6	3¾x4¾	314.0	33.7	75@2400	G	G & O	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Own	Sp	33.5	LO4IHM	380	159	5400	20x7.50	20x7.50D
Autocar RF	2	2450	Own	L	6	3¾x4¾	314.0	33.7	75@2400	G	G & O	Br-L	Spic	Ross	Str	P	DR	Own	4	Own	Sp	33.0	LO4IHM	380	159	5630	20x8.25	20x8 25D
Autocar G	2½	2600	Own	L	6	3¾x4¾	314.0	33.7	75@2400	G	G & O	Br-L	Spic	Ross	Str	P	DR	Own	4	Own	2R	39.3	LO4IHM	460	159	5880	34x7	34x7D
Autocar A	2½	3000	Own	L	6	4 x4¾	358.0	38.4	84@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	Sp	33.0	LO4IV	460	150	6350	20x8.25	20x8 25D
Autocar D	3	3500	Own	L	6	4 x4¾	358.0	38.4	84@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	39.3	LO4IV	460	150	6375	34x7	34x7D
Autocar DE	3½	3850	Own	L	6	4 x4¾	358.0	38.4	84@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	40.7	LO4IV	519	150	6890	20x9.00	20x9.00D
Autocar DF	3½	3950	Own	L	6	4 x4¾	358.0	38.4	84@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	40.7	LO4IV	519	150	7220	20x9.00	20x9.00D
Autocar DH	4	4150	Own	L	6	4 x4¾	358.0	38.4	84@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	54.3	LO4IV	519	150	7450	36x8	36x8D
Autocar N	4	4600	Own	L	6	4¼x4¾	404.0	43.4	94@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	45.6	LO4IV	519	191½	7990	20x9.75	20x9.75D
Autocar NE	5	4725	Own	L	6	4¼x4¾	404.0	43.4	94@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	5	Own	2R	50.1	LO4IV	519	149	8300	22x9.75	22x9 75D
Autocar NF	5	4800	Own	L	6	4¼x4¾	404.0	43.4	94@2500	G	G & O	Long	Spic	Ross	Str	P	DR	Own	5	Own	2R	42.1	LO4IV	519	191½	8350	22x9.75	22x9.75D
Autocar NH	5	4925	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Own	5	Own	2R	50.1	LO4IV	519	149	8350	22x9.75	22x9.75D
Autocar S	5	5500	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	54.0	LO4IV	544	158	8700	22x9.75	22x9.75D
Autocar SE	6	5800	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Own	4	Own	2R	54.0	LO4IV	544	158	8850	22x10.50	22x10.50D
Autocar C	7½	6600	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Br-L	12	Wis	2R	120.5	LO4IV	664	156	10950	24x10.50	24x10.50D
Autocar CF	7½	6900	Wak	L	6	5 x5¾	677.0	60.0	126@1800	G	Own	Br-L	Spic	Ross	Str	P	DR	Br-L	12	Wis	2R	120.5	LO4IV	664	164	11280	24x10.50	24x10 50D
Autocar T	7½	6000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Own	12	Own	2R	88.5	O4IA	544	192	9700	22x10.50	22x10.50D
Autocar TE	8½	6500	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	G & O	Long	Spic	Ross	Str	P	DR	Br-L	12	Own	2R	87.6	O4IA	660	192	10700	24x10.50	24x10.50D
Autocar TF	8½	6800	Wak	L	6	5 x5¾	677.0	60.0	126@1800	G	G & O	Br-L	Spic	Ross	Str	P	DR	Br-L	12	Own	2R	87.6	O4IA	660	195	10950	24x10.50	24x10.50D
*Autocar FE	20	9500	Ste	L	6	5½x6	780.0	66.2	156@1800	G	G & O	Br-L	Spic	Ross	Zen	P	NE	Br-L	12	Wis	2R	96.0	T4IA	664	180	12300	24x10.50	24x10.50D
*†Autocar 6GE	15	11000	Ste	L	6	5½x6	780.0	66.2	156@1800	G	G & O	Br-L	Spic	Ross	Zen	P	NE	Br-L	12	Tim	Wo	99.6	T6IA	718	198	16300	22x9.75	22x9.75D
***Autocar HS	3½	4600	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2R	54.3	O2IM	516	114	7600	40x8	40x8D
***Autocar SHS	3½	4800	Own	L	6	4¼x4¾	404.0	43.4	94@2500	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2R	54.3	O2IM	516	114	7900	40x8	40x8D
Brockway 80 C	*9500	1215	Con	L	6	3⅜x4	214.7	27.3	71@3200	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Tim	Sp	36.2	CB4IM	248	149	4075	20x6.00	20x6.00D
Brockway 90 C	*11500	1525	Con	L	6	3⅜x4⅝	248.2	27.3	70@3200	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Tim	Sp	37.4	L4IH	353	149	4355	20x6.50	20x6 50D
Brockway 92 C	*12500	1800	Con	L	6	3⅜x4⅝	248.2	27.3	70@3200	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Tim	Sp	37.4	L4IH	353	149	4450	32x6	32x6D
Brockway 120 C	*15000	1990	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Tim	Sp	38.5	L4IH	353	156	5500	32x6	32x6D
Brockway 140 C	*17500	2495	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Wis	2R	43.5	L4IHV	386	156	6100	32x6	32x6D
Brockway 141 C	*19500	2935	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Wis	2R	46.2	L4IHV	380	170	6500	32x6	32x6D
Brockway 170 C	*19500	3160	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Wis	2R	46.6	L4IHV	380	170	7100	32x6	32x6D
Brockway 175 C	*19500	3660	Con	H	6	4⅝x4¾	427.5	45.9	100@2400	C	G & O	Ful	Spic	Ross	Zen	P	*Aut	Ful	5	Wis	2R	46.6	L4IHV	380	170	7200	34x7	34x7D
Brockway 195 C	*22000	3820	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Wis	2R	52.4	L4IHV	471	170	8100	34x7	34x7D
Brockway 220 C	*25000	4560	Con	H	6	4⅝x4¾	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Zen	P	*Aut	Br-L	4	Wis	2R	50.7	L4IHV	546	170	8675	36x8	36x8D
Brockway 260 C	*28000	5850	Con	H	6	4½x5¼	501.0	48.6	120@2200	C	G & O	Ful	Spic	Ross	Zen	P	*Aut	Ful	4	Wis	2R	59.7	L4IHV	546	212	9000	22x10.50	22x10.50D
Chevrolet	½	345	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	3	Own	Sp	13.6	O4IM	101	109	*1880	19x4.75	19x4.75
Chevrolet	1½	520	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	——	131	2700	30x5	32x6
Chevrolet	1½	575	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	O4IM	170	157	3015	30x5	30x5D
Diamond T 210 S F	1½	545	Her	L	6	3⅜x4¼	228.0	27.3	60@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	WG	4	Cla	Sp	—	L4IH	196	135⅛	3100	20x5.50B	20x6.50D
Diamond T 210 FF	1½	565	Her	L	6	3⅜x4¼	228.0	27.3	60@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	—	L4IH	196	135⅛	3100	20x5.50B	20x6.50B
Diamond T 240 A	1¾	795	Her	L	6	3⅜x4¼	228.0	27.3	60@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	—	L4IH	219	137	3500	20x6.00B	32x4P
Diamond T 310	2	995	Her	L	6	3⅜x4¼	263.0	31.5	68@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	—	L4IH	350	155	4200	20x6.50B	20x6.50DB
Diamond T 350	2½	1293	Her	L	6	3⅜x4¼	282.0	33.7	70@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cla	5	Cla	Sp	—	L4IH	350	155	4700	20x7.00	20x7.00DB
Diamond T 410A	3	1695	Her	L	6	4 x4½	339.0	38.4	100@2800	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	5	Cla	Sp	—	L4IHV	350	160⅜	5400	20x7.50B	20x7.50DB
Diamond T 510	4	1995	Her	L	6	4 x4½	339.0	38.4	100@2800	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Tim	Sp	—	L4IHV	408	168	6000	20x7.00B	20x8.25 DB
Diamond T 410B	2-2½	2135	Her	L	6	4 x4½	339.0	38.4	100@2800	G	G & O	Cov	Spic	Ross	Zen	P	L-N	Cov	4	Cla	Sp	—	L4IHV	408	199	6100	20x7.50	20x7.50DB
Diamond T 504 A	3	2650	Her	L	6	4 x4½	339.0	38.4	100@2800	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Wis	2 R	—	L4IHV-1	408	176½	6400	20x8.25B	20x8 25DB
Diamond T 506 A	3	2950	Her	L	6	4⅛x4½	383.0	43.3	91@2200	G	G & O	Cov	Spic	Ross	Zen	P	L-N	Cov	5	Wis	2 R	—	L4IHV-T	408	184	6400	20x8.25B	20x8.25DB
Diamond T 603	3-4	3395	Her	L	6	4⅛x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	L4IHV-T	499	169	7500	20x9.00B	20x9.00DB
Diamond T 606 B	3-4	3695	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	G & O	Cov	Spic	Ross	Zen	P	L-N	Cov	5	Wis	2 R	—	L4IHV-T	499	187½	7500	20x9.00B	20x9 00DB
Diamond T 750	4-5	4925	Her	L	6	4⅝x5¼	529.0	51.4	114@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	—	W4IA	552	178	9300	22x9.75B	22x9.75DB
*Diamond T 801	4	4140	Her	L	6	4⅛x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Own	Wo	—	L6IHV-T	571	189½	8300	26x8P	36x8P
*Diamond T 1201	6	5600	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	G & O	Cov	SpicBlo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	W4IA-T	238	190	11000	34x7P	34x7DP
*Diamond T 1602	8	6400	Her	L	6	4⅝x5¼	529.0	51.3	114@2200	G	G & O	Cov	SpicBlo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	W4IA-T	238	190	11700	36x8P	36x8DP
*Diamond T 1603	8	7500	Wak	L	6	5 x5¾	677.4	60.0	125@2000	G	G & O	Br-L	SpicBlo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	—	W4IA-T	238	194	12500	36x8P	36x8D
Dodge Bros. UF 10	½	375	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Un	Own	Car	P	DR	Own	3	Own	Sp	12.8	O4IH	121	109	1925	19x5.00	19x5 00
Dodge Bros. F 10	½	445	Own	L	6	3⅛x4¼	211.5	25.3	66@3200	C	Fed	Borg	Un	Own	Car	P	DR	Own	4	Own	Sp	12.8	O4IH	121	109	1975	19x5.25	19x5.25
Dodge Bros. G 20	¾-1	597	Own	L	6	3⅛x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	175.8	131	2520	17x7.50	17x7.50
Dodge Bros. G 21	¾-1	622	Own	L	6	3⅛x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	175.8	157	2670	17x7.50	17x7.50
Dodge Bros. UG 20	¾-1	537	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	175.8	131	2450	17x7.50	17x7.50
Dodge Bros. UG 21	¾-1	562	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	175.8	157	2600	17x7.50	17x7.50
Dodge Bros. G 22	¾-1	759	Own	L	6	3⅛x4¾	217.7	25.35	——	—	—	—	—	——	——	——	—	—	—	—	—	—	——	—	136	3080	——	——
Dodge Bros.	1	595	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Un	Han	Zen	P	DR	Own	4	Own	Sp	33 4	O4IH	206	133	2690	20x6.00	32x6
Dodge Bros. UG 30	1½	525	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	176	131	2490	20x6.00	32x6
Dodge Bros. UG 31	1½	550	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	176	157	2640	20x6.00	36x6
Dodge Bros. G 30	1½	585	Own	L	6	3⅛x4¼	211.5	25.3	60@3100	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	176	131	2560	20x6.00	32x6
Dodge Bros. UF 30	1½	595	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	37.1	O4IH	187	136	2581	20x6.00	32x6
Dodge Bros. G 31	1½	610	Own	L	6	3⅛x4¼	211.5	25.3	60@3100	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O4IH	176	157	2710	20x6.00	32x6
Dodge Bros. UF 31	1½	670	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	37.1	O4IH	229	165	2757	20x6.00	32x6
Dodge Bros. F 30	1½	695	Own	L	6	3⅛x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	37.1	O4IH	187	136	2631	20x6.00	32x6
Dodge Bros. F 31	1½	770	Own	L	6	3⅛x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	37.1	O4IH	229	165	2807	20x6.00	32x6
†Dodge Bros. UGS 50	1½-3	875	Own	L	4	3⅜x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O6IHV	273.2	153	3575	20x6.00	32x6S
†Dodge Bros. GS 50	1½-3	935	Own	L	6	3⅛x4¼	211.5	25.3	60@3100	C	Fed	Borg	Cle	Own	Car	P	DR	Own	4	Own	Sp	36.1	O6IHV	273.2	153	3650	20x6.00	32x6S
Dodge Bros. F 35	1½	1425	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	O4IH	305	140	3780	20x6.00	20x6.00D
Dodge Bros. F 36	1½	1485	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	O4IH	305	165	3972	20x6.00	20x6.00D
Dodge Bros. G 43	2	795	Own	L	6	3⅛x4⅜	217.7	25.3	73@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	5	Own	Sp	50.0	O4IH	229	136	3345	20x7.00	20x7.00D
Dodge Bros. G 44	2	825	Own	L	6	3⅛x4⅜	217.7	25.3	73@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	5	Own	Sp	50.0	O4IH	229	165	3470	20x7.00	20x7.00D
*Dodge Bros. F 40	2	1995	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	O4IH	350	150	5173	20x6.50	20x6.50D
*Dodge Bros. F 41	2	2085	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	O4IH	350	165	5211	20x6.50	20x6.50D
Dodge Bros. F 42	2	2180	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	O4IH	350	190	5311	20x6.50	20x6.50D
†Dodge Bros. GS 55	2-4	1260	Own	L	6	3⅛x4⅜	217.7	25.3	73@3200	C	Fed	Borg	Cle	Own	Car	P	DR	Own	5	Own	Sp	50.0	O6IHV	365	158	4450	20x7.00	20x7 00D
Dodge Bros.	3	1565	Own	L	6	3⅜x4½	241.0	27.3	78@3000	G	Fed	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	O4IH	382	165	4520	32x6	32x6D
Dodge Bros.	3	1615	Own	L	6	3⅜x4½	241.0	27.3	78@3000	G	Fed	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	O4IH	382	185	4715	32x6	32x6D
Dodge Bros. F 60	3	2645	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	2 R	56.0	O4IH	416	146	5543	32x6	32x6D
*Dodge Bros. F 61	3	2575	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	O4IH	416	170	5789	32x6	32x6D
*Dodge Bros. F 62	3	2695	Own	L	6	3⅜x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	O4IH	416	195	5901	32x6	32x6D
Dodge Bros. G 80	4	5250	Own	L	8	3½x5	384.8	39.2	120@3000	G	Long	Borg	Cle	Sag	Str	P	DR	Own	5	Own	Sp	62.7	B4IA-T	650	146	7640	20x9.75	20x9.75D
Dodge Bros. G 81	4	5285	Own	L	8	3½x5	384.8	39.2	120@3000	G	Long	Borg	Cle	Sag	Str	P	DR	Own	5	Own	Sp	69.6	B4IA-T	650	170	7840	20x9.75	20x9.75D
Dodge Bros. G 82	4	5350	Own	L	8	3½x5	384.8	39.2	120@3000	G	Long	Borg	Cle	Sag	Str	P	DR	Own	5	Own	Sp	69.6	B4IA-T	650	195	8040	20x9.75	20x9.75D
Dodge Bros. G 83	4	5415	Own	L	8	3½x5	384.8	39.2	120@3000	G	Long	Borg	Cle	Sag	Str	P	DR	Own	5	Own	Sp	69.6	B4IA-T	650	220	8400	20x9.75	20x9.75D
Essex Com.	¾	435	Own	L	6	2¾x4½	163.0	18.2	55@3300	C	Har	Own	Spic	Gem	Mar	Vac	Aut	Own	3	Own	Sp	5.40	4M	147	110½	1970	20x5	20x5.50
Federal D 3	*1½	670	Con	L	4	3⅞x4¼	200.5	24.0	50@2700	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L4IH	191	130	3225	20x6.00	32x6
Federal E 3	*1½	695	Con	L	6	3⅜x4	215.0	27.3	72@3400	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L4IH	191	130	3225	20x6.00	32x6
Federal F 3	*1¾	1325	Con	L	6	3⅜x4⅝	248.0	27.3	64@2600	C	Long	Borg	Pet	Gem	Zen	P	DR	Own	4	Tim	Sp	29.2	L4IH	247	132	3765	30x5	30x5D
Federal F 5	*1¾-2	1425	Con	L	6	3⅜x4⅝	248.0	27.3	64@2600	C	Long	Borg	Pet	Gem	Zen	P	DR	Own	4	Tim	Sp	34.0	L4IH	269	132	3865	30x5	30x5D
Federal G 5	2	995	Con	L	6	3⅜x4	215.0	27.0	72@3400	C	Long	Borg	Cle	Gem	Zen	P	DR	Own	4	Tim	Sp	6.80	L4IH	269	132	3800	20x6.50B	20x6.50DB
Federal A 6	*2	1695	Con	L	6	3⅜x4⅜	248.0	27.3	64@2600	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Cla	Sp	38.5	L4IH	270	151	4580	32x6	32x6D
Federal A 6 T	*2½	1995	Con	L	6	3⅜x4⅜	248.0	27.3	64@2600	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	47.1	L4IHV	379	151	5110	32x6	32x6D
Federal A 6 T W	*2½	2130	Con	L	6	3⅜x4⅜	248.0	27.3	64@2600	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	52.9	L4IHV	379	151	5110	32x6	32x6D
Federal T 3 W	*2½	1595	Wau	L	4	4 x5	251.0	25.6	50@2000	G	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Wo	36.3	L4IH	337	148	5110	32x6	36x8
*Federal D 2 S W	*2½-3	1050	Con	L	4	3⅞x4¼	200.5	24.0	50@2700	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	312	140	3925	20x6.00	32x6
*Federal E 2 S W	*2½-3	1150	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	312	145	3975	20x6.00	32x6
*Federal D 2 D	*2½-3	1350	Con	L	4	3⅞x4¼	200.5	24.0	50@2700	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	312	140	4235	20x6.00	32x6
Federal T 3 W F A	*2½-3	1795	Wak	L	4	4 x5	251.0	25.6	50@2000	G	Long	Borg	Cle	Ross	Zen	Vac	DR	Own	4	Tim	Wo	43.9	L4IHV	379	148	5400	32x6	32x6D
*Federal E 2 D	*2½-3	1450	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Cle	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	312	145	4310	20x6.00	32x6
Federal T 10 B	*2½-3	2550	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	44.5	L4IHV	379	165	6550	34x7	34x7D
Federal T 10 W	*2½-3	2685	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Wo	44.0	L4IHV	379	165	6550	34x7	34x7D
Federal T 10 D R	*2½-3	2685	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	2R	45.6	L4IHV	379	165	6550	34x7	34x7D
Federal A 600	*2½-3	1745	Con	L	6	3⅛x4½	288.3	32.6	73@2600	C	Long	Borg	Cle	Ross	Zen	P	DR	Own	4	Cla	Sp	41.5	L4IH	270	157	5050	20x7.50	20x7.50D
Federal A 600 T	*3-3½	2045	Con	L	6	3⅛x4½	288.3	32.6	73@2600	C	Long	Borg	Cle	Ross	Zen	P	DR	Own	4	Tim	Sp	50.7	L4IHV	379	157	6100	20x8.25	20x8 25D
Federal A 600 T W	*3-3½	2180	Con	L	6	3⅛x4½	288.3	32.

Major Specifications and Mechanical Details of 1932 Commercial Cars

LEADING MAKES NATIONALLY DISTRIBUTED

(Continued from Page 9)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Transmission Make	No. Spds. For.	Rear Axle Make	Rear Axle Type	Final Drive Reduction	Type Service Brakes	Area Service Brake Lining	Standard Wheel Base	Chassis Wgt.	Tire Sizes Standard Front	Tire Sizes Standard Rear
Gramm A X 4	1	795	Con	L	4	3⅞x4½	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	*3300	20x6.00	20x6.50
Gramm A X 6	1	895	Con	L	4	3⅞x4	214.7	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4TH	380	131	3550	20x6.00	20x6.50
Gramm B X 4	1½	895	Con	L	4	3⅞x4½	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3475	20x6.00	20x6.00D
Gramm B X 6	1½	995	Con	L	6	3⅞x4	214.7	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3725	20x6.00	20x6.00D
Gramm B Z	1½	995	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	39.6	L4IH	380	131	3500	6.00x20	32x6S
Gramm B	2	1295	Lyc	L	6	3¼x4½	224.0	25.3	61@2900	G	Per	Own	Blo	Ross	Zen	Vac	Aut	Cov	4	Tim	Sp	34.3	L4IH	278	140	4150	20x6.50	20x6.50D
†Gramm C X 4	2	1095	Con	L	4	4⅛x4¼	227.0	27.2	55@2600	G	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	3900	20x6.50	20x6.50D
Gramm C X 6	2	1295	Con	L	6	3⅜x4⅜	248.2	27.3	70@3000	C	Per	Own	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	4150	20x6.50	20x6.50D
Gramm C	2	1795	Lyc	L	6	3⅜x4½	278.6	31.5	82@2600	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	31.0	L4IH	353	160	4800	20x7.00	20x7.00D
Gramm C F	2½	1395	Lyc	L	6	3¾x4½	299.0	33.7	85@2800	G	Per	Br-L	Blo	Ross	Til	P	Aut	Br-L	4	Tim	Sp	38.2	L4IH	353	160	4900	20x7.50	20x7.50D
Gramm D	2½	1995	Lyc	L	6	3¾x4½	299.0	33.7	90@2200	G	Per	Br-L	Blo	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	33.0	L4IHV	339	160	5200	20x7.50	20x7.50D
Gramm E	3	2595	Lyc	L	6	3⅞x5	353.3	36.0	90@2200	G	Per	Br-L	Blo	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	35.0	L4IHV	659	160	5950	20x8.25	20x8.25D
Gramm E Y	3	3595	Con	H	6	4⅛x4¾	380.8	40.8	90@2200	G	Per	Ful	Blo	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	30.0	L4IHA	—	190	7200	20x7.50	20x7.50D
Gramm G	4	3695	Con	H	6	4⅜x4¾	428.4	45.9	100@2200	C	Per	Br-L	Blo	Ross	Zen	P	Aut	Br-L	4	Wis	2R	49.5	L4IHV	783	165	8200	20x9.00	20x9.00D
Gramm G 8	4	3695	Lyc	L	8	3¾x4¾	419.6	44.4	130@2700	G	Per	Br-L	Blo	Ross	Zen	P	Aut	Br-L	4	Wis	2R	—	L4IHV	783	165	8200	20x9.00	20x9.00D
Gramm G Y	4	4345	Con	H	6	4⅜x4¾	428.4	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2R	28.0	BW4IM	736	210	7700	20x8.25	20x8.25D
Gramm G W	5	5175	Con	H	6	4⅜x4¾	428.0	45.9	100@2200	C	Per	Br-L	Blo	Ross	——	P	Aut	Br-L	4	Wis	2R	—	41A	864	157	9500	20x9.00	20x9.00D
Gramm GWD	5	6495	Cum-D	H	6	4½x6	572.0	57.0	125@1800	G	Per	Br-L	Blo	Ross	——	P	L-N	Bl	4	Wis	2R	25.5	4IA	864	157	9600	20x9.00	20x9.00D
Gramm H Y	5	6545	Con	L	6	4⅜x5¾	611.4	54.1	127@2300	G	Per	Ful	Blo	Ross	Zen	P	Aut	Ful	4	Wis	2R	25.2	4IA	996	236	10100	20x9.00	20x9.00D
Indiana 85	1½	885	Her	L	6	3⅝x4½	263.0	31.5	68@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	35.1	L4IH	249	141	3900	20x6.50	20x6.50D
Indiana 85 DR	1½	1190	Her	L	6	3⅝x4½	263.0	31.5	68@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	5	Wis	2R	40.1	L4IH	316	141	4200	20x6.50	20x6.50D
Indiana 95	2	1095	Her	L	6	3¾x4¼	282.0	33.7	73@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	36.2	L4IH	353	141	4400	32x6	32x6DP
Indiana 95 DR	2½	1275	Her	L	6	3¾x4¼	282.0	33.7	73@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2R	41.2	L4IH	353	141	4650	20x7.50	20x7.50DB
Indiana 17	2½	2450	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	37.8	L4IHV	398	170	7000	20x8.25	20x8.25D
*Indiana 95 SBT 151	3	1675	Her	L	6	3¾x4¼	282.0	33.7	73@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	45.8	6HV	559	188	6500	32x6	32x6DP
*Indiana 95 SW 75	3	1735	Her	L	6	3¾x4¼	282.0	33.7	73@2800	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	45.8	6HV	459	186	6200	32x6	32x6DP
Indiana 17 DR	3	2675	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2R	38.6	L4IHV	398	170	7300	20x8.25	20x8.25D
Indiana 17 W	2½	2675	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	38.1	L4IHV	398	170	7000	20x8.25	20x8.25D
Indiana 19 DR	3½	3400	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2R	52.3	L4IHV	489	170	8100	20x9.00	20x9.00D
Indiana 17 SBT 251	4	3250	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	37.8	L4IHV	625	188	8200	34x7	34x7D
*Indiana 17 SW 251	4	3475	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	38.1	L4IHV	625	188	8500	34x7	34x7D
Indiana 43 DR	4	4300	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2R	50.7	L4IHV	546	170	8500	20x9.75	20x9.75D
Indiana 45 DR	5	4800	Her	L	6	4½x5¼	529.0	51.3	115@2200	G	Yo	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2R	45.4	L4IHV	546	170	8700	20x9.75	20x9.75D
International A 1	¾	615	Wak	L	4	3⅝x4½	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	39.5	B4IM	212	136	*2887	20x5.50	20x5.50
International A 2	1½	615	Wak	L	4	3⅝x4½	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	39.5	B4IM	212	136	2935	20x6.00	20x6.00
International A 2	1½	685	Wak	L	4	3⅝x4½	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	Mec	6	Own	Sp	47.3	B4IM	212	138	2945	20x6.00	20x6.00
International A L 3	1½	1450	Lyc	L	6	3¼x4½	224.0	25.3	54@2700	G	Mod	Own	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	42.9	B4IM*	295	138	4032	20x6.00	20x6.50D
International A 3	1½	795	Lyc	L	6	3¼x4½	224.0	25.3	54@2700	G	Mod	Rock	Mec	Ross	Zen	P	DR	W-G	4	Own	Sp	33.8	B4IM*	287	136	3572	20x6.00	20x6.00
International A 3½	1½	970	Lyc	L	6	3¼x4½	224.0	25.3	54@2700	G	Mod	Rock	Mec	Ross	Zen	P	DR	W-G	4	Own	Sp	34.9	B4IM*	302	136	3600	20x6.00	20x6.00D
International A 4	2	1750	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	P	DR	Own	5	Own	Sp	47.8	B4IH*	378	145	5221	32x6	32x6D
International W 1	2½	3850	Hall	H	4	4¼x5½	312.0	28.9	59@2000	O	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2R	60.5	BO4IM*	710	148	8300	36x8S	36x8S
International A 5	3	2350	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	P	DR	Own	5	Own	Sp	52.6	B4IM*	430	156	5895	34x7	34x7D
International A 6	3	2675	Own	H	6	3⅝x4½	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	P	DR	Own	5	Own	Sp	62.5	B4IM*	430	156	6120	34x7	34x7D
International W 3	3½	4850	Hall	H	4	4¾x5½	390.0	36.1	69@2000	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2R	70.5	BO4IM*	794	160	10125	36x6S	40x12S
International A 7	5	6200	Own	H	6	4½x5½	525.0	48.6	98@1800	G	Mod	Rock	Mec	Ross	Zen	P	DR	Own	5	Own	2R	52.3	BO4IM-T	730	160	11590	20x9.75	20x9.75D
International A 8	7½	6300	Own	H	6	5 x5½	650.0	60.0	115@1800	G	Mod	Rock	Mec	Ross	Zen	P	DR	Own	5	Own	2R	52.3	BO4IM-T	730	160	11590	20x9.75	20x9.75D
Mack B G	——	2500	Own	L	6	3¼x5	248.9	25.4	41@2600	G	Own	Own	Spic	Gem	Str	P	NE	Own	4	Tim	Sp	Opt	L4IH	302	148	4200	20x6.00B	20x6.00DB
Mack B L	——	3000	Own	L	6	3⅝x5	309.6	31.6	75@2500	G	Own	Own	Spic	Own	Str	P	NE	Own	4	Own	Sp	Opt	O4IV	427	156	4950	32x6P	32x6DP
Mack B F	——	4200	Own	L	6	3⅝x5	309.6	31.6	75@2500	G	Own	Own	Spic	Han	Str	P	NE	Own	4	Own	2R	Opt	O4IV	427	156	6600	20x8.25B	20x8.25DB
Mack A B-4	——	4000	Own	L	4	4½x5	283.7	28.9	63@2100	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	6450	34x7P	34x7DP
Mack A B-4	——	4200	Own	L	4	4½x5	283.7	28.9	63@2100	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2R	Opt	O4IV	471	164½	6850	34x7P	34x7DP
Mack A B-4	——	4150	Own	L	6	3⅝x5	309.6	31.6	75@2500	G	Own	Own	Spic	Own	Str	P	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	6450	34x7P	34x7DP
Mack A B-6	——	4500	Own	L	6	3⅝x5	309.6	31.6	75@2500	G	Own	Own	Spic	Own	Str	P	NE	Own	4	Own	2R	Opt	O4IV	471	164½	6850	34x7P	34x7DP
Mack A B-6	——	4700	Own	L	6	4 x5½	414.7	38.4	94@2400	G	Own	Own	Spic	Han	Str	P	NE	Own	4	Own	2R	Opt	O4IV	427	157	7500	20x9.00B	20x9.00DB
Mack B M	——	5500	Own	L	6	4 x5½	414.7	38.4	94@2400	G	Own	Own	Spic	Own	Str	P	NE	Own	4	Own	Ch	Opt	O4IV	590	154	8000	36x8P	36x8DP
Mack B C	——	5250	Own	L	6	4 x5½	414.7	38.4	94@2400	G	Own	Own	Spic	Own	Str	P	NE	Own	4	Own	2R	Opt	O4IV	610	154	7850	36x8P	36x10P
Mack B X	——	5750	Own	L	6	4¼x5½	468.1	43.3	104@2300	G	Own	Own	Spic	Ross	Str	P	NE	Own	4	Own	Ch	Opt	O4IV	619	160	7900	22x9.75B	22x9.75DB
Mack B X	——	5600	Own	L	6	4¼x5½	468.1	43.3	104@2300	G	Own	Own	Spic	Ross	Str	P	NE	Own	4	Own	2R	Opt	O4IV	619	160	8050	22x9.75B	22x9.75DB
Mack B J	——	6450	Own	L	6	4½x5½	525.5	48.6	125@2300	G	Own	Own	Cle	Han	Str	P	NE	Own	4	Own	2R	Opt	O4IV	618	197	9800	22x10.50B	22x10.50DB
Mack B Q	——	6300	Own	L	6	4¾x5¾	610.6	54.1	128@2200	G	Own	Own	Cle	Ross	Str	P	NE	Own	4	Own	2R	Opt	O4IV	618	191	10000	22x10.50B	22x10.50DB
Mack A K-4	——	5150	Own	L	4	5 x6	471.2	40.0	75@1800	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	O4IV	492	174	9500	36x8S	36x8S
Mack A K-4	——	5250	Own	L	4	5 x6	471.2	40.0	75@1800	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2R	Opt	O4IV	492	174	9460	36x8S	36x8DS
Mack A K-6	——	6450	Own	L	6	4¾x5¾	610.6	54.1	128@2200	G	Own	Own	Spic	Han	Str	P	NE	Own	4	Own	2R	Opt	O4IV	561	186	10400	22x10.50B	20x10.50DB
Mack A C-4-L	——	4950	Own	L	4	5 x6	471.2	40.0	75@1800	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	OJXM	478	156	9100	36x8S	40x8DS
Mack A C-4-M	——	5500	Own	L	4	5 x6	471.2	40.0	75@1800	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	OJXM	478	168	9800	36x8S	40x8DS
Mack A C-4-H	——	6000	Own	L	4	5 x6	471.2	40.0	75@1800	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	OJXM	478	168	10150	36x7S	40x7DS
Mack A C-6	——	6450	Own	L	6	4¾x5¾	610.6	54.1	128@2200	G	Own	Own	Spic	Han	Str	P	NE	Own	4	Own	Ch	Opt	O4IV	755	186	11400	24x10.50B	24x10.50DB
Mack A P	——	8500	Own	L	6	5 x6	706.5	60.0	138@1900	G	Own	Own	Spic	Han	Str	Gra	NE	Own	4	Own	Ch	Opt	O2IV	284	191	11700	36x7S	40x8DS
Mack A K-6 6 wheel	——	9000	Own	L	6	4¾x5¾	610.6	54.1	128@2200	G	Own	Own	Cle	Han	Str	P	NE	Own	4	Own	2R	Opt	O6IV	1044	152-52	15600	22x9.75B	22x9.75DB
Mack A C-6 6 wheel	——	8500	Own	L	6	4¾x5¾	610.6	54.1	128@2200	G	Own	Own	Spic	Han	Str	P	NE	Own	4	Own	Ch	Opt	O6IV	1052	145-52	14300	40x8P	40x8DP
Mack A P 6 wheel	——	10500	Own	L	6	5 x6	706.5	60.0	138@1900	G	Own	Own	Spic	Han	Str	Gra	NE	Own	4	Own	Ch	Opt	O6IV	1052	145-52	14600	40x8P	40x8DP
Mack A P 6 wheel	——	11000	Own	L	6	5 x6	706.5	60.0	138@1900	G	Own	Own	Cle	Han	Str	Gra	NE	Own	4	Own	2R	Opt	O6IV	1044	152-53	15950	22x9.75B	22x9.75DB
Pierce-Arrow 18S 385	2	2500	Own	L	8	3½x5	385.0	39.2	125@2800	C	Long	Long	Cle	Han	Str	P	DR	Cla	4	Tim	Sp	33.5	B4IM-T	399	160	6000	20x8.25B	20x8.25DB
Pierce-Arrow	——	——	Her	L	6	4⅛x4½	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cla	4	Tim	Sp	34.3	B4IM	399	150	5625	20x7.50B	20x9.00B
Pierce-Arrow 15T 298	2½	1950	Her	L	6	3¾x4½	298.0	33.7	70@2600	G	Long	Long	Cle	Han	Zen	P	DR	Cla	4	Tim	Sp	40.0	B4IM	399	150	5725	20x8.25B	20x8.25DB
Pierce-Arrow 17T 361	3	2350	Her	L	6	4⅛x4½	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Sp	34.4	B4IM	399	180	5800	20x8.25B	20x9.00DB
Pierce-Arrow 18W 361	3-4	3000	Her	L	6	4⅛x4½	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	41.9	B4IA-T	473	150	6660	20x9.00B	20x9.00DB
Pierce-Arrow 19R 428	3-4	3600	Her	L	6	4⅜x4¾	428.0	46.0	94@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	28.6	B4IA	473	150	6860	20x9.00B	20x9.00DB
Pierce-Arrow 22R 501	3½	3750	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	36.0	B4IA	473	150	7050	20x9.75B	20x9.75DB
Pierce-Arrow 24X 501	4-5	4200	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	40.2	T4IA	618	160	9250	20x10.50B	20x10.50DB
Pierce-Arrow 24M 611	4-5	5000	Her	L	6	4¾x5¾	611.0	54.1	130@2000	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Tim	Wo	39 9	T4IA-T	618	160	10200	20x10.50B	20x10.50DB
Pierce-Arrow 28X 501	5½	4600	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Own	Wo	51.0	TO4IA	720	160	10675	24x10.50B	24x10.50DB
Pierce-Arrow 28M 611	5½	5400	Her	L	6	4¾x5¾	611.0	54.1	130@2000	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Own	Wo	52.5	TO4IA	720	160	11600	24x10.50B	24x10.50DB
Pierce-Arrow 28Y 479	5½	4400	Her	L	6	4⅜x4¾	479.0	51.3	104@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Own	Wo	53.0	TO4IA	720	160	10675	24x10.50B	24x10.50DB
Pierce-Arrow 31K 611	5½	5300	Her	L	6	4⅛x4½	361.0	40.3	77@2400	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Own	Wo	42.0	TO4IA	720	170	11675	24x10.50B	40x8DS
Pierce-Arrow 75M 729T	*75000	6400	Her	L	6	5¼x6	779.0	66.1	150@1800	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Own	Wo	51.9	TO4IA	720	190	12750	24x10.50B	24x10.50DB
Pierce-Arrow 27T 361T	*27000	2450	Her	L	6	4⅜x5¾	611.0	54.1	130@2000	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Sp	48.1	B4IM	399	150	5725	20x8.25	20x8.25D
Pierce-Arrow 35R 501T	*35000	3800	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	47.8	B4IA	473	150	7050	20x9.75	20x9.75D
Pierce-Arrow 45X 501T	*45000	4800	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	57.2	T4IA	618	160	9300	20x10.50	20x10.50D
†Pierce-Arrow 31L 501S4	*34000	6400	Her	L	6	4½x5¼	501.0	48.6	110@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	49.0	T6IA	1022	200	13200	20x9.75	20x9.75D
†Pierce-Arrow 41K 779S4	*44000	7500	Her	L	6	5¼x6	779.0	66.1	150@1800	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Tim	Wo	47.2	T6IA	1022	200	14500	20x10.50	20x10.50D
†Pierce-Arrow 34K 611S4	*34000	7200	Her	L	6	4¾x5¾	611.0	54.1	130@2000	G	Long	Long	Spic	Ross	Str	P	DR	Own	4	Tim	Wo	40.6	T6IA	1022	200	14200	20x9.75	20x9.75D
Reo 1 A	1½	625	Own	L	4	3⅛x4½	205.0	23.3	51@2500	G	Per	Long	Cle	Ross	Zen	P	DR	Own	4	Cla	Sp	37.1	L4IH	246	136	2930	20x6.00	32x6
Reo 1 C	1½	665	Own	L	4	3⅛x4½	205.0	23.3	51@2500	G	Per	Long	Cle	Ross	Zen	P	DR	Own	4	Cla	Sp	37.1	L4IH	246	160	3020	20x6.00	32x6
Reo 1 B	1½	795	Own	L	6	3⅛x5	230.0	23.4	68@2800	C	Own	Long	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	34.8	L4IH	246	140	3100	20x6.00B	32x6
Reo 1 D	1½	835	Own	L	6	3⅛x5	230.0	23.4	68@2800	C	Own	Long	Cle	Ross	Zen	P	DR	Own	4	Own	So	37.1	L4IH	246	164	3200	20x6.00	32x6
Reo 2B	2	1095	Own	L	6	3⅜x5	268.0	27.3	75@2800	C	Own	Long	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.6	4IH	289	142	3865	20x6.50	20x6.50D
Reo 2 D	2	1135	Own	L	6	3⅜x5	268.0	27.3	75@2800	C	Own	Long	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	5.66	4IH	289	165	4015	20x6.50	20x6.50D
Reo 2 H	2	1625	Own	L	6	3⅜x5	268.0	27.3	75@2800	C	McC	Br-L	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.5	LIH	289	142	—	20x7.00	20x7.00D
Reo 2 J	2	1695	Own	L	6	3⅜x5	268.0	27.3	75@2800	C	McC	Br-L	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.5	LIH	289	156	—	20x7.00	20x7.00D
Reo 3 H	3	2035	Own	L	6	3⅝x5	309.6	31.5	85@2800	C	McC	Br-L	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.5	LIH	344	153	—	20x7.50	20x7.50D
Reo 3 J	3	2085	Own	L	6	3⅝x5	309.6	31.5	85@2800	C	McC	Br-L	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.5	LIH	344	170	—	20x7.50	20x7.50D
Reo 3 K	3	2155	Own	L	6	3⅝x5	309.6	31.5	85@2800	C	McC	Br-L	Cle	Ross	Zen	P	DR	Own	4	Own	Sp	6.5	LIH	344	185	—	20x7.50	20x7.50D
Reo 4 H	4	3070	Own	L	8	3⅜x5	358.0	36.4	110@2800	C	McC	Long	Cle	Ross	Sch	P	DR	Own	4	Own	Sp	7.16	4IH	390	150	6150	20x9.00	20x9.00D
Reo 4 J	4	3125	Own	L	8	3⅜x5	358.0	36.4	110@2800	C	McC	Long	Cle	Ross	Sch	P	DR	Own	4	Own	Sp	6.14	4IH	390	170	—	20x9.00	20x9.00D
Reo 4 K	4	3260	Own	L	8	3⅜x5	358.0	36.4	110@2800	C	McC	Long	Cle	Ross	Sch	P	DR	Own	4	Own	Sp	6.14	4IH	390	190	—	20x9.00	20x9.00D
Stewart 30 X	1	795	Lyc	L	6	3 x4¾	201.5	23.8	60@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	257	130	3199	20x6.50	20x6.50
Stewart 42 X	1½	795	Lyc	L	6	3¼x4½	224.0	25.3	62@2600	G	Fed	Borg	Spic	Ross	Zen	P	DR	W-G	4	Cla	Sp	35.1	B4IM	257	134	3730	20x6.50	20x6.50
Stewart 40 X A	1½	995	Lyc	L	6	3¼x4½	224.0	25.3	62@2600	G	Fed	Borg	Spic	Ross	Zen	P	DR	W-G	4	Cla	Sp	——	B4IM	257	145	3670	20x6.50	20x6.50D
Stewart 45 X	2	995	Lyc	L	6	3¼x4½	242.0	27.3	62@2800	G	Fed	Borg	Spic	Ross	Zen	P	DR	W-G	4	Cla	Sp	35.1	B4IM	257	145	4375	20x6.50	20x6.50DB
Stewart 50 X	2	1195	Lyc	L	6	3⅜x4½	242.0	27.3	65@2800	G	Fed	Borg	Spic	Ross	Zen	P	DR	W-G	4	Cla	Sp	35.1	B4IM	257	148	4260	20x6.50	20x6.50DB
Stewart 29 X S	2	1695	Lyc	L	6	3¾x4½	298.0	33.7	85@2750	G	Fed	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	367	145	5194	20x7.00	20x7.00D
Stewart 32 X

EXTREME-PRESSURE LUBRICANTS TESTED

Present trends in automotive design make it necessary, according to H. R. Wolf and H. C. Mougey of the General Motors Corporation, that lubricants capable of sustaining extremely high unit pressures be developed, and this in turn requires special forms of apparatus for testing these lubricants.

These statements were brought to light at the thirteenth annual meeting of the American Petroleum Institute, held at Houston, Tex., beginning November 17. An abstract of the paper of which they form a part follows:

The present trend in automotive design is toward lower body styles, higher speed and greater acceleration.

In order to maintain the necessary road and body clearances, smaller rear axles are required. On account of this trend toward smaller gears and higher engine torque, tooth pressures and rubbing velocities are rapidly approaching a point where rear axles cannot be lubricated satisfactorily with the conventional straight petroleum lubricant.

Hypoid and worm gears operate under conditions of higher rubbing velocity than spiral bevel gears, and car manufacturers using these types of gears have found it necessary to provide special lubricants having extreme-pressure characteristics.

During the past year particular attention has been given by our laboratories to determinine the load-carrying ability of the various types of extreme-pressure lubricants in service and to developing a method of laboratory testing which will evaluate or rate lubricants in the same order of merit as actual service test.

Three types of extreme-pressure lubricants are commercially available at the present time.

A. Lubricants prepared by blending a sulphur-chloride-treated saponifiable oil base with a petroleum oil of suitable viscosity or by combining sulphur chloride direct with a petroleum oil.

B. Lubricants prepared by blending a saponifiable oil containing chemically combined, added sulphur with a petroleum oil, or straight sulphur-mineral lubricants in which the sulphur has been combined directly with the petroleum oil.

C. Lubricants containing lead soap and sulphur. The lead soap lubricants may contain added sulphur, or may depend upon the sulphur present in the mineral oil.

Of the many additive agents that have been proposed for imparting extreme pressure characteristics to petroleum lubricants sulphur and chlorine are the most effective additions in use at the present time. The lead compounds probably catalyze the added sulphur and the loosely combined sulphur, but have little or no effect on the firmly combined sulphur compounds occurring in the original crude.

The lead soaps are insoluble in most mineral oils, and tend to precipitate both in storage and in service. The lead also tends to combine with the sulphur present to form lead sulfide, which sludges out, leaving a supernatant lubricant lower in load-carrying properties than the original compound.

The chemical composition of extreme pressure lubricants is of value only in identifying the type and not in evaluating the extreme pressure characteristics. For example, the stability of the sulphur and chlorine componds is far more important than the total sulphur or chlorine present in the lubricant. Sulphur occuring in a refined oil is usually too firmly combined chemically to be available. Added sulphur may also become too firmly combined with the mineral or saponifiable oil, in the compounding or blending process, to be available as an extreme pressure constituent.

(To Be Continued)

TRUCK DEALERS

South Bend, Ind., Nov. 17.—Two new commercial car dealers have been announced by the Studebaker Corporation as follows: S. W. Knowles, Pittsburg, Cal., and the Contractors Sales Company, Inc., Albany, N. Y.

TRAINING DRIVERS IN SCHOOLS FOUND BEST BY OPERATORS

(Continued from Page 5)

fications were published and then commented on as follows:

"Carefully look over each of the six requirements! Grade yourself on each point, add up the total, and what do you get? You, in your own heart, are your best judge. If your record isn't high in your own estimation, it won't be high in the estimation of any one else. But if you are thoroughly convinced that you have measured up to the qualification as well as you are able, it is very probable that the committee will think so, too.

"After evalating your past efforts, concentrate on what you are going to do in the six months to come. Concentrate on each of the items on the qualification list. How con you build sales? Look at the June issue, page 18, for answer, and think it over. How can you win the good will of your customers and boost your products? Figure that out! Service with a smile, perhaps?

"Determine right here and now that every word you say, everything you do will contribute in some definite way to the goal toward which every salesman strives!"

The following limited contest, conducted by a company in California, afford a good example of close-tie-up between the contest and the general training efforts, in this instance weekly meetings. Meetings and contest dealt with the same subject matter. Points were given not only for doing the things advocated in the weekly meetings, but also for attending the meetings. This contest, with the background on which it was based is explained by the company's sales manager as follows:

"We aim to have some kind of contest running more than half the time with an interval between, just long enough for the men to forget the last and prepare for the next. We have found that these contests, properly planned, always arouse interest and enthusiasm. They keep the men on their mettle, give them zest in their work, and build morale.

"Our last contest was intended, primarily, as a morale builder although, of course, the ultimate aim was a large volume of business.

"All in all, our contest was intended to cover and to emphasize all points that have to do with the creation of character, as well as the creation of bank accounts. We think we see results. We believe there is apparent an upward trend in the intangible things as well as in the tangible."

R. G. CRAIG OF GRAHAM BACK ON BROADWAY

New York, Nov. 17.—The appointment of R. G. Craig as sales manager of Graham Motors, Inc., at Broadway and 62d Street, brings an oldtimer back to New York.

For the last few years Mr. Craig has been district representative for the Granam factory in New Jersey. Previous to that he was general sales manager for seven years for the C. H. Jennings Company, Dodge distributors here.

Major Specifications and Mechanical Details of 1932 Commercial Cars

LEADING MAKES NATIONALLY DISTRIBUTED

(Continued from Page 10)

Make and Model		Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H.P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brake Lining	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
White 612 A		*14000	2800	Own	L	6	3¾x4½	299.0	33.7	70@2100	C	Own	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IHV	349	148	5295	34x7.00P	34x7.00DP
White 620		*15000	4350	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.8	OL4IHV	414	157	7430	20x8.25B	20x8.25DB
White 618 L		*16000	3600	Own	L	6	3¾x4½	299.0	33.7	77@2400	C	Own	Own	Spic	Ross	Zen	Vac	DR	Own	5	Own	2R	57.2	L4IHV	349	152	6775	34x7.00P	34x7.00DP
White 51 A		*17000	3750	Own	L	4	4¼x5⅝	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	35.6	O2IM	335	170	6438	36x5.00P	36x8.00S
White 630 L		*17000	5000	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	37.3	L4IHV	553	157	8500	20x9.00B	20x9.00DB
White 618-618A		*18000	3600	Own	L	6	3¾x4½	299.0	33.7	77@2400	C	Own	Own	Spic	Ross	Zen	Vac	DR	Own	5	Own	2R	57.2	L4IHV	349	166	6775	20x9.00B	20x9.00DB
White 621		*18000	4650	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	OL4IHV	484	157	7945	20x9.00B	20x9.00DB
White 640		*20000	6100	Own	H	6	4⅝x5½	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	Sp	33.9	O4IA	553	180	9200	20x9.00B	20x9.00DB
White 630		*20000	5000	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O4IHV	553	168	8500	20x9.00B	20x9.00DB
White 58		*22000	4400	Own	L	4	4¼x5½	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	49.7	OPXM	224	189	7797	36x5	36x5SD
White 630 A		*22000	5000	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O4IHV	553	168	6500	20x9.00B	20x9.00DB
White 641		*24000	6450	Own	H	6	4⅝x5½	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	46.9	O4IA	595	180	9700	20x9.75B	20x9.75DB
*White 630	SW300	*24000	6245	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Tim	Wo	44.2	OT1HV	514	193	10000	20x8.25B	20x8.25DB
White 631		*24000	5750	Own	H	6	4 x5½	396.0	38.4	92@2100	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	2R	58.9	O4IHV	595	168	9000	20x9.25B	20x9.75DB
*White 642	SW310	*34000	8025	Own	H	6	4⅝x5¾	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	55.6	OT1A	588	198	12670	20x9.00B	20x9.00DB
White 58	SS	*30000	5300	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Ross	Zen	Vac	L-N	Own	4	Own	2R	77.6	OPXM	224	198	9300	24x10.50B	24x10.50DB
White 643		*32000	6950	Own	H	6	4⅝x5¾	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	623	180	10900	24x10.50B	24x10.50DB
White 642		*28000	6750	Own	H	6	4⅝x5¾	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	623	180	10600	24x9.75B	24x9.75DB
*White 643	SW410	*40000	8550	Own	H	6	4⅝x5¾	519.0	45.9	118@2100	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	69.1	OT1A	588	198	14400	40x8	40x8D
White 691		*32000	7250	Own	H	6	4⅝x5¾	580.0	51.3	127@2050	C	Own	Own	Spic	Ross	Zen	P	DR	Own	5	Own	2R	63.0	O4IA	623	129½	12200	24x10.50B	24x10.50DB
Willys-Overland	6-C-113	½	415	Own	L	6	3¼x3¾	193.0	25.3	65@3400	C	Fed	Own	Spic	Own	Til	P	Aut	Own	3	Own	Sp	12.4	B4IM	143	113	1920	19x6.00	19x6.00
Willys-Overland	6-C-131	1½	595	Own	L	6	3¼x3¾	193.0	25.3	65@3400	C	Fed	Own	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	235	131	2750	20x5.50	32x6
Willys-Overland	6-C-157	1½	635	Own	L	6	3¼x3¾	193.0	25.3	65@3400	C	Fed	Own	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	235	157	2900	20x5.50	32x6

GENERAL NOTATIONS

***†REFERENCE MARKS** apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds.

ENGINE—Bud, Buda; Con, Continental; Cum-D, Cummings-Diesel: Her, Hercules; Lyc, Lycoming; Pont, Pontiac; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry; Ster, Sterling Engine Co.

VALVE ARRANGEMENT—L, "L" head; H, in head, O, overhead; S, sleeve.

TYPE OF CAMSHAFT DRIVE—G, gear; C, chain.

RADIATOR MAKE—G&O, G. & O. Mfg. Co.; Per, Perfex Corp; Long, Long Mfg. Co.; Har, Harrison Radiator Corp; Fed, Fedders Mfg. Co.; McC, McCord Radiator & Mfg. Co.; Mod, Modine Mfg. Co.; Hex, Hexcel Radiator Co. Yo, Young.

CLUTCH MAKE—Jon, Jones Clutch & Gear Co.; Ful, Fuller & Sons Mfg. Co.; Borg, Borg & Beck Co.; Br-L, Brown Lipe Gear Co.; Rock, Rockford Drill & Machine Co.; Cov, Covert Gear Co.; Long, Long Mfg. Co.; Detr, Detroit Gear & Machine Co.; Mer, Merchant & Evans; Hel, Merchant & Evans.

UNIVERSALS MAKE—Spic, Spicer Mfg. Co.; Blo, Blood Bros. Machine Co.; Sup, Superior Universal Products; Un, Universal Products Co.; Cle, Cleveland Steel Products Corp.; Pet, Peters; Opt, optional; Mec, Mechanics Machine Co.

STEERING GEAR MAKE—Ross, Ross Gear & Tool Co.; Han, Hannum Mfg. Co. Sag, Saginaw Steering Gear Co.; Gem, Gemmer Mfg. Co.; Col, Columbus Gear & Pump Co.; W-G, Warner Gear Corp.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, gravity; Vac, vacuum tank; P, fuel pump.

ELECTRICAL SYSTEM — AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; NE, North East; RB, Robert Bosch; DR, Delco-Remy.

TRANSMISSION—Br-L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cot, Cotta Gear Co.; Cla, Clark Equipment Co.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Pont, Pontiac; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, internal gear; St, straight bevel; Sp, spiral bevel; Wo, worm; 2R, double reduction; Ch, chain; S-T, semi-transverse.

TYPE OF SERVICE BRAKES—

B4IM, Bendix, 4 wheel internal mechanical; B4MV, Bendix, 4 wheel, mechanical, vacuum: B6IA, Bendix, 6 wheel, internal, air; B4IMV, Bendix, 4 wheel internal mechanical, vacuum: BO4IMV, Bendix, own, 4 wheel, internal, mechanical, vacuum: BrIA, Bendix, operating on 4 rear wheels, internal air; BW4IM, Bendix front, Wisconsin rear, 4 wheel, internal, mechanical; B84IM, Bendix front, Eaton rear, 4 wheel, internal, mechanical; B4IH, Bendix 4 wheel, internal, hydraulic.

CB4IM, Columbia, Bendix, 4 wheel, internal, mechanical; C4IM, Columbia, 4 wheel, internal, mechanical; K2IM, Clark, 2 wheel, internal, mechanical; CR4IA, Christensen-Relay, 4 wheel internal, air.

L4IHVA, Lockheed, 4 wheel, internal, hydraulic, vacuum, air; LO4ID, Lockheed, own, 4 wheel, internal, drive shaft; LO4IV, Lockheed, own, 4 wheel, internal, vacuum, LT4IDV, Lockheed, Timken, 4 wheel, drive shaft, vacuum; L4IH, Lockheed 4 wheel, internal, hydraulic; L4IHA, Lockheed 4 wheel, internal, hydraulic, air; L4IHV, Lockheed, 4 wheel, internal, hydraulic, vacuum: LT4IHV, Lockheed, Timken, 4 wheel, internal, hydraulic, vacuum; LT4IVA, Lockheed, Timken, 4 wheel, internal, vacuum, air; L6IHV, Lockheed, 6 Wheel, internal, hydraulic, vacuum; L6IH, Lockheed, 6 wheel, internal, hydraulic.

O21M, Own, 2 wheel, internal, mechanical; O2IV, Own, 2 wheel, internal, vacuum: O4IA, Own, 4 wheel, internal, air; O4IH, Own, 4 wheel, internal, hydraulic; O4IHV, Own, 4 wheel internal, hydraulic, vacuum: O4IM, Own, 4 wheel, internal, mechanical: O4IV, Own, 4 wheel, internal, vacuum; O4M, Own, 4 wheel, mechanical; O2XM, Own, 2 wheel, external, mechanical; O4XM, Own, 4 wheel, external, mechanical: O6IA, Own, 6 wheel, internal, air; OJXM, Own, jack shaft, external, mechanical; OL4IHV, Own, Lockheed, 4 wheel, internal, hydraulic, vacuum; OPX, Own, propeller shaft, external; OPXM, Own, propeller shaft, external, mechanical; OPM, Own, propeller shaft, mechanical; ORIV, Own, rear wheels, internal, vacuum: OTIHV, Own Timken, internal, hydraulic, vacuum.

S4IM, Steeldraulic, 4 wheel, internal, mechanical.

T4rIA, Timken, operating on 4 rear wheels, internal, air; T4IA, Timken, 4 wheel, internal, air; T6IA, Timken, 6 wheel, internal air; T2IMV, Timken, 2 wheel, internal, mechanical, vacuum.

W4I, Westinghouse, 4 wheel, internal; W4IA, Westinghouse, 4 wheel, internal, air; 46IA, Westinghouse, 6 wheel, internal, air; 4IA, 4 wheel, internal, air; 4IH, 4 wheel, internal, hydraulic; 4M, 4 wheel, mechanical.

-T, True-stop. *Models on which Trustop is optional.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

***CHASSIS WEIGHT** according to Automotive Daily News formula, which is the chassis with gas, oil, water and spare tire, but without cab or other equipment.

TIRES—B, balloon; D, dual, S, solid; P, pneumatic.

SPECIAL NOTATIONS

AUTOCAR

*For tractor use only.
**Six wheeler driving from 4 rear wheels.
***Engines in these models are located under driver's seat.

BROCKWAY

*Models equipped with twin ignition.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DIAMOND T

*Six-wheelers.

Additional standard wheel base available as follows:

510	158	750	167, 192
504A	160½	801	180½, 199¼
506A	174	1201	174½, 180
603	157, 179	1602	174½, 180
606B	177½	1603	184

DODGE

*Models F40, F41, F61 and F62 can be had with double drop frame.
†Six wheelers.

FEDERAL

†Six-wheelers.
*Also rated in pounds at total allowable weight as follows:

D 3	8,500	A 600 S W	20,000
E 3	8,500	A 600 D	20,000
F 7	10,000	U S	21,000
F 8	11,500	U 6 D R	21,000
A 6	13,500	A 6 S W	18,500
A 6 T	15,000	C 7	24,000
A 6 T W	15,000	C 7 W	24,000
T 3 W	14,000	C 8	24,000
T 8 W F	15,000	C 8 W	24,000
D 2 S W	12,500	X 8	30,000
E 2 S W	12,500	X 8 D R	30,000
D 2 D	12,500	X 8 R	30,000
2 E D	12,500	X 8 R D R	30,000
A 600	15,000	A 600	15,000
A 600 T	17,000	A 600 T	17,000
A 600 T W	17,000	A 600 T W	17,000
A 600 T D R	17,000	A 60 T D R	17,000
T 10 B	18,000	A 600 S W	20,000
T 10 W	18,000	A 600 D	20,000
T 10 D R	18,000	T 3 W F A	16,000

†Both the four and six cylinder are also offered in 157-inch wheel base at $1,145 and $1,345, respectively.

Model T 10 SW also available in 206 and 224 inch wheel bases.

GENERAL MOTORS TRUCK

*Capacity indicated is the Straight Rating (combined weight of chassis body, equipment and pay load) for which each chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment based on tire capacity. Prices cover base chassis and vary with wheel base and tire combinations. The number of wheel base lengths, tire types, range of "recommended gross weights" and resulting pay load range (assuming nominal body allowance) for each model follow:—

Note: Models T-15 to T-61, inclusive, are available for export only as coach chassis.

Model	Wheel Bases	Tire Types	Range of "Rec. Gross Weights"	Pay Load Range
T-15	3	10	4500- 6500	½-1½
T-18	2	..	7500- 8200	1½-2
T-19	4	..	7500-10000	1½-2½
T-23	2	..	8500-10000	2-3
T-25	3	17	6800- 9000	1½-2
T-26	4	..	8500-11000	2-3
T-30	3	15	10000-12500	2-3
T-31	4	..	11000-14000	2½-4
T-42	4	12	12000-15000	2½-4
T-44	4	12	12000-16000	3-4½
T-45	4	..	13500-16000	3-4½
T-51	4	..	16500-19000	4-5½
T-60	4	18	18500-22000	5-6½
T-61	4	..	19500-22000	5-6½
T-82	4	12	19000-24000	5-7
T-83	4	..	20000-25000	5-7½
T-85	3	..	25000-30000	6-8
T-90	3	..	22000-28000	5-7½
T-95	3	..	30000-40000	7-11
T-110	2	..	32000-40000	8-12
T-130	3	..	42500-50000	12-15

Optional rear axle gear ratios available for all models, except Model T-18. Double reduction axles available for Models T-45, T-51, T-60, T-61, T-82, T-83 and T-95.

GRAMM

Series	Straight Rating	Wheel Base		Pay Load Range
AX 4	8,000	157	1	to 1½ tons
AX 6	8,000	157	1	to 1½ tons
BX 4	10 000	157	1½	to 2 tons
BX 6	10,000	157	1½	to 2 tons
CX 4	12,000	157-180	2	to 3 tons
CX 6	12,000	157-180	2	to 3 tons
B	12,000	157-174	1¾	to 2½ tons
C	14,000	145-196	2	to 3 tons
D	17,000	145-196	2½	to 4 tons
E	20,000	145-224	3	to 4½ tons
EY	.....	.....	3	to 4 tons
G	24,000	165-235	4	to 6 tons
G 8	24,000	165-235	4	to 6 tons
GY	.....	.....	4	to 5 tons
GW	28,000	157-240	5	to 7½ tons
GWD	30,000	157-240	5	to 7½ tons
HY	.....	.....	5	to 6½ tons

†Both the four and six-cylinder are also offered in 157-inch wheel base at $1,145 and $1,345, respectively.

INDIANA

*Six-wheelers.

INTERNATIONAL

Brake H. P. values given for International motor trucks are net values obtained with all standard equipment accessories running

PIERCE-ARROW

*Optional final drive on models except "S" and "T" series.
†Six-wheelers.

REO

Model 2 D can be secured in 166-inch wheel base at $1,095.

STEWART

Model 30X can also be supplied in 120, 140 and 160-inch wheel base.

Models 40XA can also be supplied in 134, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160, 176 and 190-inch wheel base.

*Models 18X and 32X can be supplied in 148, 190 and 220-inch wheel base
*Models 19X, 31X and 27XS can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment Models 18X, 19X, 31X and 27XS can be supplied with Timken dual reduction rear axle.

Models 38-8, 38-6, 48-8 and 58-8 can be supplied in 160, 170, 180, 196, 226 and 241-inch wheel base and worm axle.

WHITE

Six-wheelers.

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